



United States  
Department of  
Agriculture



Natural  
Resources  
Conservation  
Service

In cooperation with  
United States Department  
of Agriculture, Forest  
Service, and Virginia  
Polytechnic Institute and  
State University

# Soil Survey of Nelson County, Virginia





# How to Use This Soil Survey

## General Soil Map

The general soil map, which is the color map preceding the detailed soil maps, shows the survey area divided into groups of associated soils called general soil map units. This map is useful in planning the use and management of large areas.

To find information about your area of interest, locate that area on the map, identify the name of the map unit in the area on the color-coded map legend, then refer to the section **General Soil Map Units** for a general description of the soils in your area.

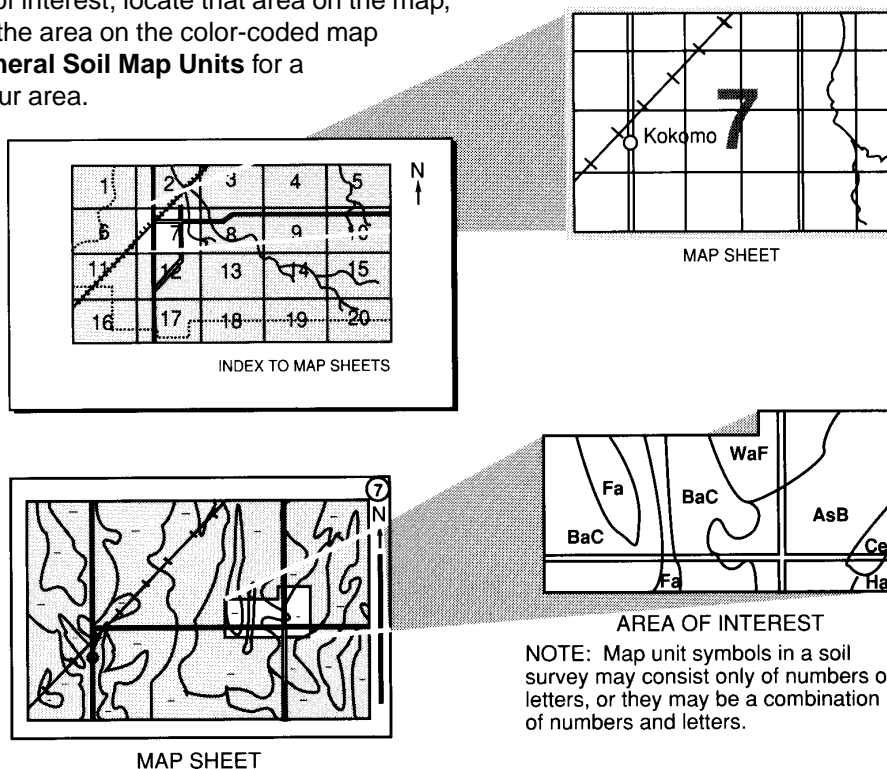
## Detailed Soil Maps

The detailed soil maps follow the general soil map. These maps can be useful in planning the use and management of small areas.

To find information about your area of interest, locate that area on the **Index to Map Sheets**, which precedes the soil maps. Note the number of the map sheet and turn to that sheet.

Locate your area of interest on the map sheet. Note the map unit symbols that are in that area. Turn to the **Contents**, which lists the map units by symbol and name and shows the page where each map unit is described.

The **Contents** shows which table has data on a specific land use for each detailed soil map unit. Also see the **Contents** for sections of this publication that may address your specific needs.



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This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (formerly the Soil Conservation Service) has leadership for the Federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in 1989. Soil names and descriptions were approved in 1992. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1992. This soil survey was made cooperatively by the United States Department of Agriculture, Natural Resources Conservation Service and Forest Service, and the Virginia Polytechnic Institute and State University. Financial assistance was provided by the Virginia Department of Conservation and Recreation and the Nelson County Board of Supervisors. The survey is part of the technical assistance furnished to the Thomas Jefferson Soil and Water Conservation District.

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**Cover:** Corn on Suches loam, 0 to 2 percent slopes, frequently flooded, is in the foreground. Pasture, hay, and farm buildings in an area of Colleen gravelly loam, 7 to 15 percent slopes, are in the middle ground. Mixed hardwoods and pines, in areas that are dominantly Edneytown-Peaks complex, 35 to 55 percent slopes, extremely stony, are in the background on Priest Mountain.

*Additional information about the Nation's natural resources is available on the Natural Resources Conservation Service home page on the World Wide Web. The address is <http://www.nrcs.usda.gov> (click on "Technical Resources").*

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# Foreword

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This soil survey contains information that affects land use planning in Nelson County. It contains predictions of soil behavior for selected land uses. The survey also highlights soil limitations, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

This soil survey is designed for many different users. Farmers, foresters, and agronomists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to ensure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

Various regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. The information in this report is intended to identify soil properties that are used in making various decisions for land use or land treatment. Statements made in this report are intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are shallow to bedrock. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described. Information on specific uses is given for each soil. Help in using this publication and additional information are available at the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

M. Denise Doetzer  
State Conservationist  
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# Soil Survey of Nelson County, Virginia

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By Steven K. Thomas, Virginia Polytechnic Institute and State University

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United States Department of Agriculture, Natural Resources Conservation Service, in cooperation with  
United States Department of Agriculture, Forest Service, and Virginia Polytechnic Institute and State University

NELSON COUNTY is in the west-central part of Virginia (fig. 1). It has a total area of 303,700 acres, or 474.3 square miles, and includes about 19,476 acres in the George Washington National Forest. The Blue Ridge Parkway runs parallel to the Nelson-Rockbridge and Nelson-Augusta County lines. Lovingston is the county seat.

Nelson County is bounded on the north by Albemarle County, on the east by the James River and Buckingham County, on the south by Appomattox and Amherst Counties, and on the west by Augusta and Rockbridge Counties.

Nelson County was formed from Amherst County in 1807. It was named for General Thomas Nelson, Governor of Virginia in 1781.

## General Nature of the County

This section gives general information about Nelson County. It describes the physiography, relief, and drainage and the climate.

## Physiography, Relief, and Drainage

Nelson County is located in two physiographic provinces—the Piedmont and the Blue Ridge. The eastern half of the county is part of the Piedmont Plateau. Elevation in Nelson County ranges from about 300 feet above sea level, on the flood plains of the James River near Howardsville in the eastern part of the county, to about 4,063 feet, on Priest Mountain

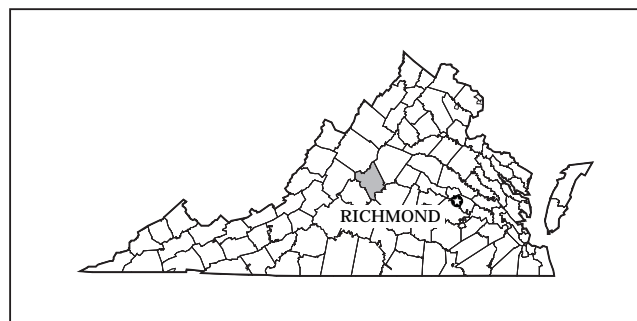


Figure 1.—Location of Nelson County in Virginia.

in the George Washington National Forest in the western part of the county.

The Piedmont is dissected and rolling and is underlain by crystalline rocks, such as gneiss and schist. It consists of gently sloping and strongly sloping ridge summits and strongly sloping to very steep side slopes. The steeper side slopes generally occur along the major drainageways. The soils of the Piedmont commonly are very deep and well drained and have a clayey subsoil. They range from shallow to very deep and from excessively drained to poorly drained and can have a loamy or clayey subsoil. Relief generally ranges from about 20 to 200 feet.

Within the Piedmont are several mountains that have a general northeast-southwest orientation. The soils in these mountain areas are generally moderately deep to very deep and well drained and

somewhat excessively drained. Maximum relief is about 1,800 feet.

The Blue Ridge consists of long, steep and very steep side slopes bordering narrow to broad, strongly sloping and moderately steep ridge summits. It is underlain by a variety of metamorphic, igneous, and metasedimentary rocks. Relief ranges from 100 to 3,500 feet. The Blue Ridge has the highest elevations in the survey area.

Long, narrow to broad flood plains occur along the James, Tye, Piney, and Rockfish Rivers and other large streams in the county. The soils of the flood plains are well drained to poorly drained. Most have a loamy subsoil, but those near the mountains have a cobbly subsoil.

## Climate

Table 1 gives data on temperature and precipitation for the survey area as recorded at Tye River Station, Virginia, in the period 1961 to 1990. Tables 2 and 3 give data as recorded in the period 1963 to 1990. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season.

In winter, the average temperature is 36.8 degrees F and the average daily minimum temperature is 25.9 degrees. The lowest temperature on record, which occurred on January 21, 1985, is -10 degrees. In summer, the average temperature is 74.2 degrees and the average daily maximum temperature is 85.6 degrees. The highest recorded temperature, which occurred on August 21, 1983, is 105 degrees.

Growing degree days are shown in table 1. They are equivalent to "heat units." During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (40 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The total average annual precipitation is 44.07 inches. Of this, about 27.07 inches, or 61 percent, usually falls in April through October. The growing season for most crops falls within this period. The heaviest 1-day rainfall during the period of record was 6.38 inches on June 22, 1972. Thunderstorms occur on about 40 days each year, and most occur in July.

The average seasonal snowfall is 8.8 inches. The greatest snow depth at any one time during the period of record was 25 inches, recorded on January 26, 1987. On the average, 6 days of the year have at least 1 inch of snow on the ground. The heaviest 1-day

snowfall on record was 17 inches, recorded on December 26, 1969.

The average relative humidity in midafternoon is about 53 percent. Humidity is higher at night, and the average at dawn is about 80 percent. The sun shines 63 percent of the time possible in summer and 53 percent in winter. The prevailing wind is from the southwest. Average windspeed is highest, 9.1 miles per hour, in March.

## How This Survey Was Made

This survey was made to provide information about the soils and miscellaneous areas in the survey area. The information includes a description of the soils and miscellaneous areas and their location and a discussion of their suitability, limitations, and management for specified uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

The soils and miscellaneous areas in the survey area are in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the

soil profiles that they studied. They noted color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify the soils. After describing the soils and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

While a soil survey is in progress, samples of some of the soils in the area are generally collected for laboratory analyses and for engineering tests. The data from these analyses and tests and from field-observed characteristics and soil properties are used to predict behavior of the soils under different uses. Interpretations are field tested through observation of

the soils in different uses under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a relatively high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot assure that a high water table will be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in accurately locating boundaries.



# General Soil Map Units

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The general soil map shows broad areas that have a distinctive pattern of soils, relief, and drainage. Each map unit on the general soil map is a unique natural landscape. Typically, it consists of one or more major soils or miscellaneous areas and some minor soils or miscellaneous areas. It is named for the major soils or miscellaneous areas. The components of one map unit can occur in another but in a different pattern. Table 4 shows the acreage and proportionate extent of the general soil map units in the survey area and their components.

The general soil map can be used to compare the suitability of large areas for general land uses. Areas of suitable soils can be identified on the map. Likewise, areas where the soils are not suitable can be identified.

Because of its small scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or a building or other structure. The soils in any one map unit differ from place to place in slope, depth, drainage, and other characteristics that affect management.

## 1. Hayesville-Occoquan-Wintergreen

### **Setting**

*Topography:* Interfluvies, side slopes, nose slopes, head slopes, and high terraces

*Location:* Central area of the county, in the Piedmont Province, at the base of the Blue Ridge Mountains

*Vegetation:* Mixed hardwoods, pines, and crops

*Slope range:* 2 to 50 percent

*Elevation:* 400 to 1,500 feet

*Drainage pattern:* Dendritic

### **Composition**

*Percent of survey area:* 26.0

Hayesville soils: 56 percent

Occoquan soils: 25 percent

Wintergreen soils: 19 percent

Minor components: Less than 1 percent

### **Soil Properties and Qualities**

#### **Hayesville**

*Depth:* Very deep

*Drainage class:* Well drained

*Parent material:* Gneiss and granite residuum

*Permeability:* Moderate

*Soil description:*

0 to 6 inches—brown loam

6 to 40 inches—red clay

40 to 57 inches—red clay loam

57 to 62 inches—red loam saprolite that has reddish yellow lithochromic masses

#### **Occoquan**

*Depth:* Deep

*Drainage class:* Well drained and somewhat excessively drained

*Parent material:* Gneiss, granite, and granodiorite residuum

*Permeability:* Moderate and moderately rapid

*Soil description:*

0 to 4 inches—dark brown loam

4 to 13 inches—yellowish red sandy clay loam

13 to 41 inches—yellowish red sandy loam saprolite

41 to 60 inches—slightly weathered soft gneiss that crushes to strong brown sandy loam

#### **Wintergreen**

*Depth:* Very deep

*Drainage class:* Well drained

*Parent material:* Colluvium and alluvium

*Permeability:* Moderate

*Soil description:*

0 to 3 inches—dark brown loam

3 to 7 inches—yellowish red loam

7 to 24 inches—red clay

24 to 35 inches—red clay

35 to 62 inches—red, strong brown, and pinkish white clay

### **Minor Components**

- Small areas of Pits, quarry

## 2. Elioak-Hazel

### **Setting**

*Topography:* Interfluvies, side slopes, nose slopes, and head slopes

*Location:* Central area of the county, in the Piedmont Province

*Vegetation:* Mixed hardwoods, pines, and crops

*Slope range:* 2 to 45 percent

*Elevation:* 400 to 1,200 feet

*Drainage pattern:* Dendritic

### **Composition**

*Percent of survey area:* 12.3

Elioak soils: 53 percent

Hazel soils: 45 percent

Minor components: 2 percent

### **Soil Properties and Qualities**

#### **Elioak**

*Depth:* Very deep

*Drainage class:* Well drained

*Parent material:* Phyllite and schist residuum

*Permeability:* Moderate

*Soil description:*

0 to 3 inches—dark yellowish brown loam

3 to 8 inches—brown loam

8 to 26 inches—red clay

26 to 40 inches—red clay loam that has yellowish brown lithochromic masses

40 to 60 inches—variegated strong brown and red loam saprolite

#### **Hazel**

*Depth:* Moderately deep

*Drainage class:* Excessively drained

*Parent material:* Phyllite, schist, and sandstone residuum

*Permeability:* Moderate rapid

*Soil description:*

0 to 5 inches—yellowish brown channery loam

5 to 19 inches—strong brown channery sandy loam

19 to 31 inches—light yellowish brown very channery sandy loam saprolite

31 inches—hard graywacke sandstone bedrock

### **Minor Components**

- Glenelg soils, which are well drained and have less clay in the subsoil than the Elioak and Hazel soils
- Small areas of Pits, quarry
- Edneytown soils, which are well drained and formed in granite, granite gneiss, and granodiorite residuum

## 3. Bugley-Littlejoe-Buffstat

### **Setting**

*Topography:* Interfluvies, side slopes, nose slopes, and head slopes

*Location:* Southern area of the county, in the Piedmont Province

*Vegetation:* Mixed hardwoods, pines, and crops

*Slope range:* 2 to 50 percent

*Elevation:* 300 to 800 feet

*Drainage pattern:* Dendritic

### **Composition**

*Percent of survey area:* 8.5

Bugley soils: 67 percent

Littlejoe soils: 22 percent

Buffstat soils: 11 percent

### **Soil Properties and Qualities**

#### **Bugley**

*Depth:* Shallow

*Drainage class:* Somewhat excessively drained

*Parent material:* Sericite schist residuum

*Permeability:* Moderately rapid

*Soil description:*

0 to 3 inches—yellowish brown channery silt loam

3 to 13 inches—yellowish brown very channery silt loam

13 to 18 inches—yellowish brown, slightly weathered soft sericite schist bedrock that crushes to extremely channery silt loam

18 inches—hard sericite schist bedrock

#### **Littlejoe**

*Depth:* Deep

*Drainage class:* Well drained

*Parent material:* Sericite schist residuum

*Permeability:* Moderate

*Soil description:*

0 to 2 inches—yellowish brown silt loam

2 to 8 inches—brownish yellow loam

8 to 28 inches—red clay

28 to 41 inches—red silty clay loam

41 inches—slightly weathered soft sericite schist bedrock that crushes to reddish brown silt loam

#### **Buffstat**

*Depth:* Deep

*Drainage class:* Well drained

*Parent material:* Sericite schist residuum

*Permeability:* Moderate

*Soil description:*

0 to 4 inches—dark yellowish brown silt loam  
 4 to 8 inches—reddish yellow channery silty clay loam  
 8 to 28 inches—strong brown channery silty clay loam  
 28 to 42 inches—reddish yellow channery clay  
 42 to 58 inches—reddish brown and brownish yellow,  
 slightly weathered soft sericite schist bedrock that  
 crushes to silt loam  
 58 inches—hard sericite schist bedrock

**4. Minnieville-Spriggs*****Setting***

*Topography:* Interfluves, side slopes, nose slopes, and head slopes

*Location:* Southern area of the county, in the Piedmont Province

*Vegetation:* Mixed hardwoods, pines, and crops

*Slope range:* 2 to 50 percent

*Elevation:* 300 to 800 feet

*Drainage pattern:* Dendritic

***Composition***

*Percent of survey area:* 4.3

Minnieville soils: 63 percent

Spriggs soils: 37 percent

Minor components: Less than 1 percent

***Soil Properties and Qualities*****Minnieville**

*Depth:* Very deep

*Drainage class:* Well drained

*Parent material:* Greenstone, gabbro, and hornblende gneiss residuum

*Permeability:* Moderate

*Soil description:*

0 to 12 inches—brown loam

12 to 49 inches—red clay

49 to 72 inches—red clay saprolite

**Spriggs**

*Depth:* Moderately deep

*Drainage class:* Well drained

*Parent material:* Gabbro, diorite, and greenstone residuum

*Permeability:* Moderate

*Soil description:*

0 to 4 inches—brown loam

4 to 14 inches—yellowish brown gravelly loam

14 to 20 inches—yellowish brown gravelly loam saprolite

20 to 41 inches—slightly weathered soft gabbro bedrock that crushes to yellowish brown, strong brown, and light brownish gray gravelly sandy loam

***Minor Components***

- Small areas of Pits, quarry

**5. Warminster-Arcola*****Setting***

*Topography:* Interfluves, side slopes, nose slopes, and head slopes

*Location:* Southeastern area of the county, in the Piedmont Province

*Vegetation:* Mixed hardwoods, pines, and crops

*Slope range:* 2 to 50 percent

*Elevation:* 300 to 600 feet

*Drainage pattern:* Dendritic

***Composition***

*Percent of survey area:* 0.6

Warminster soils: 51 percent

Arcola soils: 49 percent

***Soil Properties and Qualities*****Warminster**

*Depth:* Deep

*Drainage class:* Well drained

*Parent material:* Triassic red shale residuum

*Permeability:* Moderate

*Soil description:*

0 to 8 inches—yellowish red clay loam

8 to 38 inches—red clay

38 to 45 inches—red clay loam

45 to 55 inches—red clay loam

55 inches—slightly weathered, soft red shale bedrock that crushes to red silt loam

**Arcola**

*Depth:* Moderately deep

*Drainage class:* Well drained

*Parent material:* Triassic and Jurassic interbedded sandstone, siltstone, and conglomerate residuum

*Permeability:* Moderate

*Soil description:*

0 to 6 inches—dark reddish brown gravelly silt loam

6 to 16 inches—reddish brown silty clay loam

16 to 34 inches—reddish brown gravelly silty clay loam

34 to 58 inches—variegated dusty red and dark

reddish brown, slightly weathered soft bedrock  
that crushes to extremely gravelly silt loam  
58 inches—hard conglomerate bedrock

## 6. Colleen-Sketerville-Pineywoods

### **Setting**

*Topography:* Interfluves, side slopes, nose slopes,  
head slopes, and broad flats  
*Location:* Western area of the county, in the Piedmont  
Province  
*Vegetation:* Mixed hardwoods, pines, and crops  
*Slope range:* 0 to 25 percent  
*Elevation:* 600 to 900 feet  
*Drainage pattern:* Dendritic

### **Composition**

*Percent of survey area:* 1.7  
Colleen soils: 47 percent  
Sketerville soils: 29 percent  
Pineywoods soils: 24 percent  
Minor components: Less than 1 percent

### **Soil Properties and Qualities**

#### **Colleen**

*Depth:* Very deep  
*Drainage class:* Well drained  
*Parent material:* Anorthosite residuum  
*Permeability:* Slow  
*Soil description:*  
0 to 9 inches—dark yellowish brown and yellowish red  
gravelly loam  
9 to 29 inches—red gravelly clay  
29 to 50 inches—red, reddish yellow, and white  
gravelly clay  
50 to 72 inches—red, reddish yellow, and white  
gravelly clay loam saprolite

#### **Sketerville**

*Depth:* Very deep  
*Drainage class:* Moderately well drained  
*Parent material:* Anorthosite residuum  
*Permeability:* Slow  
*Soil description:*  
0 to 4 inches—dark grayish brown, pale brown, and  
yellow silt loam  
4 to 12 inches—light yellowish brown clay  
12 to 42 inches—yellowish brown clay that has light  
brownish gray iron depletions  
42 to 52 inches—gray and light brownish gray clay  
saprolite

52 to 70 inches—white, light gray, and light brownish  
gray silty clay loam saprolite that has brownish  
yellow iron masses

#### **Pineywoods**

*Depth:* Deep  
*Drainage class:* Poorly drained  
*Parent material:* Anorthosite residuum  
*Permeability:* Slow  
*Soil description:*  
0 to 1 inch—very dark gray silt loam  
1 to 6 inches—light brownish gray silt loam that has  
brownish yellow iron masses  
6 to 15 inches—light brownish gray silty clay that has  
brownish yellow iron masses  
15 to 22 inches—light brownish gray clay that has pale  
brown iron masses  
22 to 41 inches—white loam saprolite that has light  
gray stains and reddish yellow iron masses  
41 inches—light gray, slightly weathered soft  
anorthosite bedrock that crushes to clay loam

### **Minor Components**

- Small areas of Pits, quarry

## 7. Jackland

### **Setting**

*Topography:* Interfluves, side slopes, and nose slopes  
*Location:* Central area of the county, in the Piedmont  
Province  
*Vegetation:* Mixed hardwoods, pines, and crops  
*Slope range:* 2 to 15 percent  
*Elevation:* 400 to 600 feet  
*Drainage pattern:* Dendritic

### **Composition**

*Percent of survey area:* 0.7  
Jackland soils: 100 percent

### **Soil Properties and Qualities**

#### **Jackland**

*Depth:* Very deep  
*Drainage class:* Somewhat poorly drained  
*Parent material:* Gabbro, diorite, and greenstone  
residuum  
*Permeability:* Very slow  
*Soil description:*  
0 to 9 inches—dark brown gravelly silt loam  
9 to 30 inches—dark yellowish brown clay that has  
black manganese masses

30 to 61 inches—variegated light olive brown, pale yellow, and black sandy clay loam saprolite that has lenses of clay

## 8. Fauquier-Spriggs

### **Setting**

*Topography:* Interfluves, side slopes, nose slopes, and head slopes

*Location:* Central area of the county, in the Piedmont Province

*Vegetation:* Mixed hardwoods, pines, and crops

*Slope range:* 7 to 50 percent

*Elevation:* 700 to 1,400 feet

*Drainage pattern:* Dendritic

### **Composition**

*Percent of survey area:* 1.6

Fauquier soils: 84 percent

Spriggs soils: 16 percent

### **Soil Properties and Qualities**

#### **Fauquier**

*Depth:* Deep

*Drainage class:* Well drained

*Parent material:* Greenstone, gabbro, and diorite residuum

*Permeability:* Moderate

*Soil description:*

0 to 6 inches—brown loam

6 to 40 inches—red clay that has reddish yellow lithochromic masses

40 to 50 inches—slightly weathered soft gabbro bedrock that crushes to reddish yellow loam

50 inches—hard gabbro bedrock

#### **Spriggs**

*Depth:* Moderately deep

*Drainage class:* Well drained

*Parent material:* Gabbro, diorite, and greenstone residuum

*Permeability:* Moderate

*Soil description:*

0 to 4 inches—brown loam

4 to 14 inches—yellowish brown gravelly loam

14 to 20 inches—yellowish brown gravelly loam saprolite

20 to 41 inches—slightly weathered soft gabbro bedrock that crushes to yellowish brown, strong brown, and light brownish gray gravelly sandy loam

## 9. Myersville-Catoctin-Lew

### **Setting**

*Topography:* Interfluves, side slopes, nose slopes, and head slopes

*Location:* Northern and northwestern areas of the county, in the Blue Ridge Province

*Vegetation:* Mixed hardwoods and eastern white pine

*Slope range:* 7 to 80 percent

*Elevation:* 1,000 to 3,500 feet

*Drainage pattern:* Dendritic

### **Composition**

*Percent of survey area:* 4.8

Myersville soils: 37 percent

Catoctin soils: 33 percent

Lew soils: 25 percent

Minor components: 5 percent

### **Soil Properties and Qualities**

#### **Myersville**

*Depth:* Deep

*Drainage class:* Well drained

*Parent material:* Greenstone residuum

*Permeability:* Moderate

*Soil description:*

0 to 11 inches—dark brown channery silt loam

11 to 25 inches—yellowish brown channery clay loam

25 to 40 inches—yellowish brown channery clay

40 to 47 inches—very pale brown very channery silt loam saprolite that has black and yellowish brown lithochromic masses

#### **Catoctin**

*Depth:* Moderately deep

*Drainage class:* Well drained

*Parent material:* Greenstone residuum

*Permeability:* Moderately rapid

*Soil description:*

0 to 5 inches—dark brown channery silt loam

5 to 28 inches—strong brown channery silt loam that has areas of yellowish brown channery silty clay loam

28 to 36 inches—yellowish brown extremely channery silt loam saprolite

36 inches—hard greenstone bedrock

#### **Lew**

*Depth:* Very deep

*Drainage class:* Well drained

*Parent material:* Colluvium and local alluvium

*Permeability:* Moderate

*Soil description:*

0 to 8 inches—dark yellowish brown channery silt loam  
 8 to 36 inches—dark yellowish brown very channery silty clay loam  
 36 to 62 inches—strong brown extremely channery silty clay loam

**Minor Components**

- Areas of Rock outcrop

**10. Edneytown-Peaks****Setting**

*Topography:* Interfluves, side slopes, nose slopes, and head slopes

*Location:* Northern and northwestern areas of the county, in the Blue Ridge Province

*Vegetation:* Mixed hardwoods and eastern white pine

*Slope range:* 7 to 70 percent

*Elevation:* 800 to 4,063 feet

*Drainage pattern:* Dendritic

**Composition**

*Percent of survey area:* 28.1

Edneytown soils: 47 percent

Peaks soils: 34 percent

Minor components: 19 percent

**Soil Properties and Qualities****Edneytown**

*Depth:* Very deep

*Drainage class:* Well drained

*Parent material:* Granite, granite gneiss, and granodiorite residuum

*Permeability:* Moderate

*Soil description:*

0 to 7 inches—very dark grayish brown loam  
 7 to 34 inches—strong brown loam  
 34 to 48 inches—strong brown sandy loam saprolite that has reddish yellow lithochromic masses  
 48 to 67 inches—yellowish brown sandy loam saprolite

**Peaks**

*Depth:* Moderately deep

*Drainage class:* Somewhat excessively drained

*Parent material:* Granite, granodiorite, and gneiss residuum

*Permeability:* Moderately rapid

*Soil description:*

0 to 2 inches—very dark grayish brown very gravelly loam

2 to 7 inches—dark yellowish brown very gravelly loam

7 to 25 inches—strong brown very gravelly loam

25 to 36 inches—slightly weathered soft granodiorite bedrock that crushes to yellowish brown extremely channery loam

36 inches—hard granodiorite bedrock

**Minor Components**

- Saunook soils, which are well drained and formed in granite, granite gneiss, and granodiorite colluvium
- Areas of Rock outcrop
- Thurmont soils, which are well drained and formed in granite, granite gneiss, and granodiorite colluvium
- Hayesville soils, which are well drained and formed in biotite gneiss and granite residuum
- Occoquan soils, which are well drained and formed in biotite gneiss and granite residuum

**11. Sylco-Sylvatus****Setting**

*Topography:* Interfluves, side slopes, nose slopes, and head slopes

*Location:* Northwestern area of the county, in the Blue Ridge Province

*Vegetation:* Mixed hardwoods and eastern white pine

*Slope range:* 7 to 70 percent

*Elevation:* 2,000 to 3,300 feet

*Drainage pattern:* Dendritic and trellis

**Composition**

*Percent of survey area:* 1.2

Sylco soils: 49 percent

Sylvatus soils: 47 percent

Minor components: 4 percent

**Soil Properties and Qualities****Sylco**

*Depth:* Moderately deep

*Drainage class:* Well drained

*Parent material:* Phyllite, siltstone, and slate residuum

*Permeability:* Moderate

*Soil description:*

0 to 3 inches—dark yellowish brown channery silt loam

3 to 25 inches—yellowish brown very channery silty

clay loam that has strong brown and pale yellow lithochromic masses

25 to 34 inches—very channery clay loam that has strong brown and pale yellow lithochromic masses

34 to 38 inches—slightly weathered soft phyllite bedrock that crushes to yellowish brown extremely channery loam

38 inches—hard phyllite bedrock

### **Sylvatus**

*Depth:* Shallow

*Drainage class:* Well drained

*Parent material:* Phyllite, siltstone, and slate residuum

*Permeability:* Moderate

*Soil description:*

0 to 1 inch—yellowish brown very channery silt loam

1 to 9 inches—yellowish brown very channery silty clay loam

9 to 15 inches—yellowish brown extremely channery clay loam

15 to 19 inches—slightly weathered soft phyllite bedrock that crushes to yellowish brown extremely channery silt loam

19 inches—hard, fractured phyllite bedrock

### **Minor Components**

- Areas of Rock outcrop

## **12. Wingina-Galtsmill-Batteau**

### **Setting**

*Topography:* Flood plains

*Location:* Along the James River

*Vegetation:* Mixed hardwoods and pines

*Slope range:* 0 to 2 percent

*Elevation:* 300 to 400 feet

*Drainage pattern:* Variable

### **Composition**

*Percent of survey area:* 1.2

Wingina soils: 29 percent

Galtsmill soils: 17 percent

Batteau soils: 15 percent

Minor components: 39 percent

### **Soil Properties and Qualities**

#### **Wingina**

*Depth:* Very deep

*Drainage class:* Well drained

*Parent material:* Recent alluvium

*Permeability:* Moderately rapid

*Soil description:*

0 to 9 inches—very dark grayish brown loam

9 to 23 inches—dark brown loam

23 to 40 inches—brown loam

40 to 65 inches—brown fine sandy loam

#### **Galtsmill**

*Depth:* Very deep

*Drainage class:* Well drained

*Parent material:* Recent alluvium

*Permeability:* Moderately rapid

*Soil description:*

0 to 15 inches—very dark grayish brown fine sandy loam

15 to 35 inches—brown fine sandy loam

35 to 48 inches—brown loam

48 to 72 inches—brown fine sandy loam

#### **Batteau**

*Depth:* Very deep

*Drainage class:* Moderately well drained

*Parent material:* Recent alluvium

*Permeability:* Moderate

*Soil description:*

0 to 13 inches—dark brown loam

13 to 18 inches—dark yellowish brown loam that has yellowish brown iron masses

18 to 32 inches—dark yellowish brown loam that has grayish brown iron depletions and yellowish brown iron masses

32 to 48 inches—dark brown loam that has dark grayish brown iron depletions and yellowish brown iron masses

48 to 62 inches—dark yellowish brown and grayish brown loam

### **Minor Components**

- Yogaville soils, which are poorly drained and formed in recent alluvium
- Areas of water

## **13. Delanco-Craigsville-Suches**

### **Setting**

*Topography:* Stream terraces and flood plains

*Location:* Throughout the survey area

*Vegetation:* Mixed hardwoods and pines

*Slope range:* 0 to 25 percent

*Elevation:* 300 to 900 feet

*Drainage pattern:* Variable

### **Composition**

*Percent of survey area:* 9

Delanco soils: 26 percent

Craigsville soils: 15 percent

Suches soils: 12 percent

Minor components: 47 percent

### **Soil Properties and Qualities**

#### **Delanco**

*Depth:* Very deep

*Drainage class:* Moderately well drained

*Parent material:* Alluvium

*Permeability:* Moderately slow

*Soil description:*

0 to 5 inches—brown loam

5 to 18 inches—strong brown clay loam that has brown iron depletions

18 to 31 inches—yellowish brown clay loam that has strong brown iron masses

31 to 45 inches—yellowish brown clay loam that has strong brown iron masses and light brownish gray iron masses

45 to 65 inches—strong brown loam that has yellowish red and light yellowish brown iron masses

#### **Craigsville**

*Depth:* Very deep

*Drainage class:* Well drained

*Parent material:* Recent alluvium

*Permeability:* Moderately rapid and rapid

*Soil description:*

0 to 6 inches—dark brown very cobbly loam

6 to 21 inches—strong brown extremely cobbly sandy loam

21 to 50 inches—yellowish brown extremely cobbly loamy sand

50 to 64 inches—dark yellowish brown extremely gravelly loamy sand

#### **Suches**

*Depth:* Very deep

*Drainage class:* Moderately well drained

*Parent material:* Recent alluvium

*Permeability:* Moderate

*Soil description:*

0 to 11 inches—brown loam

11 to 23 inches—strong brown loam

23 to 30 inches—dark brown clay loam

30 to 43 inches—yellowish brown sandy clay loam

43 to 61 inches—yellowish brown and light brownish gray sandy loam

### **Minor Components**

- Colvard soils, which are well drained and formed in recent alluvium on flood plains
- Unison soils, which are well drained and formed in old alluvium on high terraces
- Codorus soils, which are moderately well drained and formed in recent alluvium on flood plains
- Areas of water
- Lew soils, which are well drained and formed in local colluvium or alluvium on terraces
- Chatuge soils, which are poorly drained and formed in recent alluvium on stream terraces
- Hatboro soils, which are poorly drained and formed in recent alluvium on flood plains
- Elsinboro soils, which are well drained and formed in recent alluvium on stream terraces
- Belvoir soils, which are somewhat poorly drained and formed in colluvium and residuum
- Areas of Pits, quarry
- Udorthents

# Detailed Soil Map Units

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The map units delineated on the detailed maps represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this section, along with the maps, can be used to determine the suitability and potential of a unit for specific uses. They also can be used to plan the management needed for those uses. More information about each map unit is given under the heading "Use and Management of the Soils."

A map unit delineation on a map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils or miscellaneous areas. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils and miscellaneous areas are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some "included" areas that belong to other taxonomic classes.

Most included soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, inclusions. They may or may not be mentioned in the map unit description. Other included soils and miscellaneous areas, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, inclusions. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. The included areas of contrasting soils or miscellaneous areas are mentioned in the map unit descriptions. A few included areas may not have been observed, and consequently they are not mentioned in

the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of included areas in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans, but if intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives the principal hazards and limitations to be considered in planning for specific uses.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Hayesville loam, 2 to 7 percent slopes, is a phase of the Hayesville series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are called complexes. A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Edneytown-Peaks complex, 35 to 55 percent slopes, extremely stony, is an example.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Pits, quarry, is an example.

Detailed map unit composition was decided by *subjective judgement*. Subjective judgement implies that 3 to 30 or more arbitrarily selected observations and less than 10 randomly selected observations are used to subjectively formulate map unit composition. The project staff relies mainly on impressions from field experience.

Table 5 gives the acreage and proportionate extent of the detailed soil map units. Other tables (see "Contents") give properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils or miscellaneous areas.

### **1D—Arcola gravelly silt loam, 15 to 25 percent slopes**

#### ***Composition***

Arcola soil and similar components: 90 to 95 percent  
Dissimilar components: 5 to 10 percent

#### ***Setting***

*Depth class:* Moderately deep  
*Drainage class:* Well drained  
*Landform:* Uplands  
*Landscape position:* Back slopes  
*Parent material:* Triassic and Jurassic interbedded siltstone, fine-grained sandstone, and conglomerate  
*Shape of areas:* Irregular  
*Size of areas:* 5 to 50 acres

#### ***Typical Profile***

0 to 6 inches—dark reddish brown gravelly silt loam  
6 to 16 inches—reddish brown silty clay loam  
16 to 34 inches—reddish brown gravelly silty clay loam  
34 to 58 inches—variegated dusty red and dark reddish brown, slightly weathered soft bedrock that crushes to extremely gravelly silt loam  
58 inches—hard conglomerate bedrock

#### ***Minor Components***

##### ***Dissimilar:***

- The deep Warminster soils that have a clay subsoil and are in landscape positions similar to those of the Arcola soil

##### ***Similar:***

- Areas that have less gravel in the surface layer than the Arcola soil

Additional information specific to the soils in this map unit is available in the section "Soil Properties." For general and detailed information about managing the map unit, refer to the section "Use and Management of the Soils."

### **1E—Arcola gravelly silt loam, 25 to 50 percent slopes**

#### ***Composition***

Arcola soil and similar components: 90 to 95 percent  
Dissimilar components: 5 to 10 percent

#### ***Setting***

*Depth class:* Moderately deep  
*Drainage class:* Well drained  
*Landform:* Uplands  
*Landscape position:* Back slopes  
*Parent material:* Triassic and Jurassic interbedded siltstone, fine-grained sandstone, and conglomerate  
*Shape of areas:* Irregular  
*Size of areas:* 5 to 50 acres

#### ***Typical Profile***

0 to 6 inches—dark reddish brown gravelly silt loam  
6 to 16 inches—reddish brown silty clay loam  
16 to 34 inches—reddish brown gravelly silty clay loam  
34 to 58 inches—variegated dusty red and dark reddish brown, slightly weathered soft bedrock that crushes to extremely gravelly silt loam  
58 inches—hard conglomerate bedrock

#### ***Minor Components***

##### ***Dissimilar:***

- The deep Warminster soils that have a clay subsoil and are in landscape positions similar to those of the Arcola soil

##### ***Similar:***

- Areas that have less gravel in the surface layer than the Arcola soil

Additional information specific to the soils in this map unit is available in the section "Soil Properties." For general and detailed information about managing the map unit, refer to the section "Use and Management of the Soils."

## 2A—Batteau loam, 0 to 2 percent slopes, occasionally flooded

### Composition

Batteau soil and similar components: 85 to 90 percent  
Dissimilar components: 10 to 15 percent

### Setting

*Depth class:* Very deep  
*Drainage class:* Moderately well drained  
*Landform:* Flood plains  
*Landscape position:* Depressions and areas at the base of adjacent terraces and uplands  
*Parent material:* Alluvium  
*Shape of areas:* Irregular  
*Size of areas:* 5 to 50 acres

### Typical Profile

0 to 13 inches—dark brown loam  
13 to 48 inches—dark yellowish brown and dark brown loam that has yellowish brown iron masses and grayish brown iron depletions  
48 to 62 inches—dark yellowish brown and grayish brown (iron depletions) loam

### Minor Components

#### *Dissimilar:*

- The well drained Galtsmill and Wingina soils, which have less clay in the subsoil than the Batteau soil and are in similar landscape positions
- The poorly drained Yogaville soils, which are at the base of terraces and uplands, in depressions, and in other lower areas
- Areas that have more sand or cobbles, or both, in the subsoil than the Batteau soil

#### *Similar:*

- Areas that have a surface layer that is lighter colored or thinner, or both, than that of the Batteau soil
- Areas that have a gravelly surface layer

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

## 3B—Belvoir sandy loam, 2 to 7 percent slopes

### Composition

Belvoir soil and similar components: 85 to 90 percent  
Dissimilar components: 10 to 15 percent

### Setting

*Depth class:* Very deep  
*Drainage class:* Somewhat poorly drained  
*Landform:* Uplands  
*Landscape position:* Foot slopes in drainageways  
*Parent material:* Colluvium  
*Shape of areas:* Concave  
*Size of areas:* 5 to 30 acres

### Typical Profile

0 to 4 inches—dark yellowish brown sandy loam  
4 to 12 inches—yellowish brown sandy clay loam that has pale brown iron depletions  
12 to 25 inches—yellowish brown sandy clay loam that has grayish brown iron depletions  
25 to 40 inches—yellowish brown sandy clay loam that has strong brown iron masses and light gray iron depletions  
40 to 63 inches—brownish yellow clay that has gray and strong brown iron masses

### Minor Components

#### *Dissimilar:*

- The poorly drained Chatuge soils on terraces, on toe slopes, and in areas at the head of drainageways
- The well drained Delanco soils on foot slopes in drainageways
- The well drained Thurmont soils on back slopes and foot slopes

#### *Similar:*

- Somewhat poorly drained areas that do not have a firm, brittle layer in the subsoil

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

## 4B—Buffstat silt loam, 2 to 7 percent slopes

### Composition

Buffstat soil and similar components: 85 to 90 percent  
Dissimilar components: 10 to 15 percent

### Setting

*Depth class:* Deep  
*Drainage class:* Well drained  
*Landform:* Uplands  
*Landscape position:* Summits and shoulders  
*Parent material:* Residuum derived from sericite schist

*Shape of areas:* Irregular  
*Size of areas:* 5 to 100 acres

### **Typical Profile**

0 to 4 inches—dark yellowish brown silt loam  
 4 to 8 inches—reddish yellow channery silty clay loam  
 8 to 28 inches—strong brown channery silty clay loam  
 28 to 42 inches—reddish yellow channery clay  
 42 to 58 inches—reddish brown and brownish yellow,  
 slightly weathered soft sericite schist bedrock that  
 crushes to silt loam  
 58 inches—hard sericite schist bedrock

### **Minor Components**

#### *Dissimilar:*

- The somewhat excessively drained Bugley soils that have less clay in the subsoil than the Buffstat soil and are on shoulders and back slopes

#### *Similar:*

- Littlejoe soils that have a red subsoil and are in landscape positions similar to those of the Buffstat soil
- Soils that are underlain by phyllite bedrock

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

## **4C—Buffstat silt loam, 7 to 15 percent slopes**

### **Composition**

Buffstat soil and similar components: 85 to 90 percent  
 Dissimilar components: 10 to 15 percent

### **Setting**

*Depth class:* Deep  
*Drainage class:* Well drained  
*Landform:* Uplands  
*Landscape position:* Shoulders and back slopes  
*Parent material:* Residuum derived from sericite schist  
*Shape of areas:* Irregular  
*Size of areas:* 5 to 100 acres

### **Typical Profile**

0 to 4 inches—dark yellowish brown silt loam  
 4 to 8 inches—reddish yellow channery silty clay loam  
 8 to 28 inches—strong brown channery silty clay loam  
 28 to 42 inches—reddish yellow channery clay  
 42 to 58 inches—reddish brown and brownish yellow,

slightly weathered soft sericite schist bedrock that  
 crushes to silt loam  
 58 inches—hard sericite schist bedrock

### **Minor Components**

#### *Dissimilar:*

- The somewhat excessively drained Bugley soils that have less clay in the subsoil than the Buffstat soil and are in similar landscape positions

#### *Similar:*

- Littlejoe soils that have a red subsoil and are in landscape positions similar to those of the Buffstat soil
- Soils that are underlain by phyllite bedrock

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

## **4D—Buffstat silt loam, 15 to 25 percent slopes**

### **Composition**

Buffstat soil and similar components: 85 to 90 percent  
 Dissimilar components: 10 to 15 percent

### **Setting**

*Depth class:* Deep  
*Drainage class:* Well drained  
*Landform:* Uplands  
*Landscape position:* Back slopes  
*Parent material:* Residuum derived from sericite schist  
*Shape of areas:* Irregular  
*Size of areas:* 5 to 100 acres

### **Typical Profile**

0 to 4 inches—dark yellowish brown silt loam  
 4 to 8 inches—reddish yellow channery silty clay loam  
 8 to 28 inches—strong brown channery silty clay loam  
 28 to 42 inches—reddish yellow channery clay  
 42 to 58 inches—reddish brown and brownish yellow,  
 slightly weathered soft sericite schist bedrock that  
 crushes to silt loam  
 58 inches—hard sericite schist bedrock

### **Minor Components**

#### *Dissimilar:*

- The somewhat excessively drained Bugley soils that have less clay in the subsoil than the Buffstat soil and are in similar landscape positions

*Similar:*

- Littlejoe soils that have a red subsoil and are in landscape positions similar to those of the Buffstat soil
- Soils that are underlain by phyllite bedrock

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

### **5C—Bugley channery silt loam, 7 to 15 percent slopes**

#### ***Composition***

Bugley soil and similar components: 85 to 90 percent  
Dissimilar components: 10 to 15 percent

#### ***Setting***

*Depth class:* Shallow

*Drainage class:* Somewhat excessively drained

*Landform:* Uplands

*Landscape position:* Shoulders and back slopes

*Parent material:* Residuum derived from sericite schist

*Shape of areas:* Irregular

*Size of areas:* 5 to 50 acres

#### ***Typical Profile***

0 to 3 inches—yellowish brown channery silt loam

3 to 13 inches—yellowish brown very channery silt loam

13 to 18 inches—yellowish brown, slightly weathered soft sericite schist bedrock that crushes to extremely channery silt loam

18 inches—hard sericite schist

#### ***Minor Components***

*Dissimilar:*

- The well drained Littlejoe soils that have a subsoil of red clay and are in landscape positions similar to those of the Bugley soil
- The well drained Buffstat soils that have a subsoil of reddish yellow clay and are in landscape positions similar to those of the Bugley soil
- Areas that have a very stony surface layer

*Similar:*

- Soils that are underlain by phyllite bedrock

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

### **5D—Bugley channery silt loam, 15 to 25 percent slopes**

#### ***Composition***

Bugley soil and similar components: 85 to 90 percent  
Dissimilar components: 10 to 15 percent

#### ***Setting***

*Depth class:* Shallow

*Drainage class:* Somewhat excessively drained

*Landform:* Uplands

*Landscape position:* Back slopes

*Parent material:* Residuum derived from sericite schist

*Shape of areas:* Irregular

*Size of areas:* 5 to 100 acres

#### ***Typical Profile***

0 to 3 inches—yellowish brown channery silt loam

3 to 13 inches—yellowish brown very channery silt loam

13 to 18 inches—yellowish brown, slightly weathered soft sericite schist bedrock that crushes to extremely channery silt loam

18 inches—hard sericite schist

#### ***Minor Components***

*Dissimilar:*

- The well drained Littlejoe soils that have a subsoil of red clay and are in landscape positions similar to those of the Bugley soil
- The well drained Buffstat soils that have a subsoil of reddish yellow clay and are in landscape positions similar to those of the Bugley soil
- Areas that have a very stony surface layer

*Similar:*

- Soils that are underlain by phyllite bedrock

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

### **5E—Bugley channery silt loam, 25 to 50 percent slopes**

#### ***Composition***

Bugley soil and similar components: 85 to 90 percent  
Dissimilar components: 10 to 15 percent

#### ***Setting***

*Depth class:* Shallow

*Drainage class:* Somewhat excessively drained

*Landform:* Uplands

*Landscape position:* Back slopes

*Parent material:* Residuum derived from sericite schist

*Shape of areas:* Irregular

*Size of areas:* 5 to 200 acres

### **Typical Profile**

0 to 3 inches—yellowish brown channery silt loam

3 to 13 inches—yellowish brown very channery silt loam

13 to 18 inches—yellowish brown, slightly weathered soft sericite schist bedrock that crushes to extremely channery silt loam

18 inches—hard sericite schist

### **Minor Components**

*Dissimilar:*

- The well drained Littlejoe soils that have a subsoil of red clay and are in landscape positions similar to those of the Bugley soil
- The well drained Buffstat soils that have a subsoil of reddish yellow clay and are in landscape positions similar to those of the Bugley soil
- Areas that have a very stony surface layer

*Similar:*

- Soils that are underlain by phyllite bedrock

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

## **6E—Catoctin-Rock outcrop complex, 25 to 75 percent slopes, extremely stony**

### **Composition**

Catoctin soil and similar components: 55 to 60 percent

Rock outcrop: 30 to 35 percent

Dissimilar components: 5 to 15 percent

### **Setting**

*Depth class:* Catoctin—moderately deep; Rock outcrop—not applicable

*Drainage class:* Catoctin—well drained; Rock outcrop—not applicable

*Landform:* Mountain ridges

*Landscape position:* Back slopes

*Parent material:* Residuum derived from greenstone

*Shape of areas:* Irregular

*Size of areas:* 5 to 250 acres

### **Typical Profile**

#### **Catoctin**

0 to 5 inches—dark brown channery silt loam

5 to 28 inches—strong brown channery silt loam that has lenses of yellowish brown channery silty clay loam

28 to 36 inches—yellowish brown extremely channery silt loam saprolite

36 inches—hard greenstone bedrock

#### **Rock outcrop**

Areas of Rock outcrop consist of exposures of metabasalts and associated metavolcanic and metasedimentary rocks, primarily greenstone. The outcrops are as much as 50 feet in height and are spaced 10 to 200 feet apart.

### **Minor Components**

*Dissimilar:*

- Myersville soils that have fewer rock fragments in the subsoil than the Catoctin soil and are in similar landscape positions

*Similar:*

- Areas that have Rock outcrop spaced more than 200 feet apart

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

## **7B—Chatuge loam, 1 to 4 percent slopes**

### **Composition**

Chatuge soil and similar components: 85 to 90 percent

Dissimilar components: 10 to 15 percent

### **Setting**

*Depth class:* Very deep

*Drainage class:* Poorly drained

*Landform:* Stream terraces and fans

*Landscape position:* Toe slopes and areas at the head of drainageways

*Parent material:* Alluvium

*Shape of areas:* Irregular and concave

*Size of areas:* 5 to 30 acres

### **Typical Profile**

0 to 9 inches—dark brown loam

9 to 41 inches—gray sandy clay loam and clay loam

having reddish yellow and strong brown iron masses  
41 to 62 inches—gray sandy loam

### **Minor Components**

#### *Dissimilar:*

- The well drained Delanco soils in landscape positions similar to those of the Chatuge soil
- The well drained Suches soils on flood plains
- The somewhat poorly drained Codorus soils on flood plains

#### *Similar:*

- The poorly drained Hatboro soils on flood plains
- Areas that have a subsoil that is sandier than that of the Chatuge soil
- Areas that have a gravelly surface layer

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

## **8A—Codorus silt loam, 0 to 2 percent slopes, occasionally flooded**

### **Composition**

Codorus soil and similar components: 85 to 90 percent  
Dissimilar components: 10 to 15 percent

### **Setting**

*Depth class:* Very deep

*Drainage class:* Somewhat poorly drained

*Landform:* Flood plains

*Landscape position:* Depressions and areas at the base of adjacent terraces and uplands

*Parent material:* Recent alluvium

*Shape of areas:* Irregular

*Size of areas:* 5 to 50 acres

### **Typical Profile**

0 to 3 inches—dark brown silt loam

3 to 18 inches—dark brown silt loam that has yellowish red iron masses

18 to 50 inches—brown silty clay loam that has strong brown iron masses and grayish brown and dark gray iron depletions

50 to 72 inches—dark grayish brown loamy sand

### **Minor Components**

#### *Dissimilar:*

- The well drained Colvard soils in the higher areas on flood plains

- The moderately well drained Suches soils in landscape positions similar to those of the Codorus soil
- The poorly drained Hatboro soils in landscape positions similar to those of the Codorus soil

#### *Similar:*

- Areas that have a surface layer that is darker than that of the Codorus soil
- Areas that have a subsoil that is sandier than that of the Codorus soil
- Areas that have cobbles in the subsoil and substratum
- Areas that have a gravelly surface layer

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

## **9B—Colleen gravelly loam, 2 to 7 percent slopes**

### **Composition**

Colleen soil and similar components: 85 to 95 percent  
Dissimilar components: 5 to 15 percent

### **Setting**

*Depth class:* Very deep

*Drainage class:* Well drained

*Landform:* Uplands

*Landscape position:* Summits and shoulders

*Parent material:* Residuum derived from anorthosite

*Shape of areas:* Irregular

*Size of areas:* 5 to 30 acres

### **Typical Profile**

0 to 9 inches—very dark yellowish brown gravelly loam

9 to 29 inches—red gravelly clay

29 to 50 inches—red, reddish yellow, and white gravelly clay

50 to 72 inches—red, reddish yellow, and white gravelly clay loam saprolite

### **Minor Components**

#### *Dissimilar:*

- Hayesville soils that have moderate permeability and are in landscape positions similar to those of the Colleen soil
- Minnieville soils that have moderate permeability

and are in landscape positions similar to those of the Colleen soil

- The moderately well drained Sketerville soils in landscape positions similar to those of the Colleen soil
- The poorly drained Pineywoods soils in the more level and depressional landscape positions

*Similar:*

- Soils that do not have a gravelly surface layer

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

### **9C—Colleen gravelly loam, 7 to 15 percent slopes**

#### ***Composition***

Colleen soil and similar components: 85 to 95 percent  
Dissimilar components: 5 to 15 percent

#### ***Setting***

*Depth class:* Very deep

*Drainage class:* Well drained

*Landform:* Uplands

*Landscape position:* Shoulders and back slopes

*Parent material:* Residuum derived from anorthosite

*Shape of areas:* Irregular

*Size of areas:* 5 to 30 acres

#### ***Typical Profile***

0 to 9 inches—very dark yellowish brown gravelly loam

9 to 29 inches—red gravelly clay

29 to 50 inches—red, reddish yellow, and white gravelly clay

50 to 72 inches—red, reddish yellow, and white gravelly clay loam saprolite

#### ***Minor Components***

*Dissimilar:*

- Hayesville soils that have moderate permeability and are in landscape positions similar to those of the Colleen soil
- Minnieville soils that have moderate permeability and are in landscape positions similar to those of the Colleen soil
- The moderately well drained Sketerville soils in landscape positions similar to those of the Colleen soil

*Similar:*

- Soils that do not have a gravelly surface layer

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

### **9D—Colleen gravelly loam, 15 to 25 percent slopes**

#### ***Composition***

Colleen soil and similar components: 85 to 95 percent  
Dissimilar components: 5 to 15 percent

#### ***Setting***

*Depth class:* Very deep

*Drainage class:* Well drained

*Landform:* Uplands

*Landscape position:* Back slopes

*Parent material:* Residuum derived from anorthosite

*Shape of areas:* Irregular

*Size of areas:* 5 to 30 acres

#### ***Typical Profile***

0 to 9 inches—very dark yellowish brown gravelly loam

9 to 29 inches—red gravelly clay

29 to 50 inches—red, reddish yellow, and white gravelly clay

50 to 72 inches—red, reddish yellow, and white gravelly clay loam saprolite

#### ***Minor Components***

*Dissimilar:*

- Hayesville soils that have moderate permeability and are in landscape positions similar to those of the Colleen soil
- Minnieville soils that have moderate permeability and are in landscape positions similar to those of the Colleen soil
- The moderately well drained Sketerville soils in landscape positions similar to those of the Colleen soil

*Similar:*

- Soils that do not have a gravelly surface layer

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

### **10A—Colvard fine sandy loam, 0 to 4 percent slopes, occasionally flooded**

#### **Composition**

Colvard soil and similar components: 85 to 90 percent  
Dissimilar components: 10 to 15 percent

#### **Setting**

*Depth class:* Very deep  
*Drainage class:* Well drained  
*Landform:* Flood plains  
*Landscape position:* Higher areas on the flood plains, adjacent to streams  
*Parent material:* Recent alluvium  
*Shape of areas:* Irregular to linear  
*Size of areas:* 5 to 25 acres

#### **Typical Profile**

0 to 5 inches—dark brown fine sandy loam  
5 to 12 inches—dark yellowish brown fine sandy loam  
12 to 50 inches—strong brown fine sandy loam  
50 to 56 inches—buried dark grayish brown loam  
56 to 62 inches—buried strong brown loamy coarse sand

#### **Minor Components**

##### *Dissimilar:*

- Delanco soils that have more clay in the subsoil than the Colvard soil and are on terraces and foot slopes of adjacent landforms
- The somewhat poorly drained Codorus soils in depressions and at the base of adjacent terraces and uplands
- The moderately well drained Suches soils in depressions and at the base of adjacent terraces and uplands

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

### **11A—Craigsville very cobbly loam, 0 to 2 percent slopes, frequently flooded**

#### **Composition**

Craigsville soil and similar components: 85 to 90 percent  
Dissimilar components: 10 to 15 percent

#### **Setting**

*Depth class:* Very deep  
*Drainage class:* Well drained  
*Landform:* Flood plains  
*Landscape position:* Areas adjacent to streams  
*Parent material:* Recent alluvium  
*Shape of areas:* Irregular to linear  
*Size of areas:* 5 to 100 acres

#### **Typical Profile**

0 to 6 inches—dark brown very cobbly loam  
6 to 21 inches—strong brown extremely cobbly sandy loam  
21 to 50 inches—yellowish brown extremely cobbly loamy sand  
50 to 64 inches—dark yellowish brown extremely gravelly loamy sand

#### **Minor Components**

##### *Dissimilar:*

- Colvard soils that have fewer rock fragments throughout than the Craigsville soil and are in similar landscape positions
- The well drained Lew soils that have more clay in the subsoil than the Craigsville soil and are on fans, terraces, and upland foot slopes
- The moderately well drained Suches soils in depressions and at the base of adjacent terraces and uplands
- The somewhat poorly drained Codorus soils in depressions and at the base of adjacent terraces and uplands
- The poorly drained Hatboro soils in depressions and at the base of adjacent terraces and uplands
- Areas that have a very stony surface layer

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils” (fig. 2).

### **12B—Delanco loam, 2 to 7 percent slopes**

#### **Composition**

Delanco soil and similar components: 85 to 95 percent  
Dissimilar components: 5 to 15 percent

#### **Setting**

*Depth class:* Very deep  
*Drainage class:* Moderately well drained



Figure 2.—Hayland in an area of Craigsville very cobbly loam, 0 to 2 percent slopes, frequently flooded.

*Landform:* Stream terraces and fans

*Landscape position:* Stream terrace treads and foot slopes and drainageways of fans

*Parent material:* Alluvium

*Shape of areas:* Irregular to linear

*Size of areas:* 5 to 50 acres

### ***Typical Profile***

0 to 5 inches—brown loam

5 to 18 inches—strong brown clay loam that has yellowish red and light yellowish brown iron masses and brown iron depletions

18 to 45 inches—yellowish brown clay loam that has strong brown iron masses and light brownish gray iron depletions

45 to 65 inches—strong brown loam that has yellowish

red and light yellowish brown iron masses and light brownish gray iron depletions

### ***Minor Components***

#### *Dissimilar:*

- The well drained Elsinboro soils in landscape positions similar to those of the Delanco soil
- Suches soils that have less subsoil development than the Delanco soil and are on flood plains
- The somewhat poorly drained Codorus soils that have less subsoil development than the Delanco soil and are in slight depressions on flood plains

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing

the map unit, refer to the section “Use and Management of the Soils.”

### **12C—Delanco loam, 7 to 15 percent slopes**

#### ***Composition***

Delanco soil and similar components: 85 to 90 percent  
Dissimilar components: 10 to 15 percent

#### ***Setting***

*Depth class:* Very deep  
*Drainage class:* Moderately well drained  
*Landform:* Fans  
*Landscape position:* Foot slopes and drainageways  
*Parent material:* Alluvium  
*Shape of areas:* Irregular to linear  
*Size of areas:* 5 to 50 acres

#### ***Typical Profile***

0 to 5 inches—brown loam  
5 to 18 inches—strong brown clay loam that has yellowish red and light yellowish brown iron masses and brown iron depletions  
18 to 45 inches—yellowish brown clay loam that has strong brown iron masses and light brownish gray iron depletions  
45 to 65 inches—strong brown loam that has yellowish red and light yellowish brown iron masses and light brownish gray iron depletions

#### ***Minor Components***

##### *Dissimilar:*

- The well drained Elsinboro soils in landscape positions similar to those of the Delanco soil
- The well drained Suches soils on flood plains
- The somewhat poorly drained Belvoir soils in landscape positions similar to those of the Delanco soil
- The poorly drained Chatuge soils in landscape positions similar to those of the Delanco soil

##### *Similar:*

- Eroded areas that have a surface layer of clay loam
- Areas that have a clayey subsoil

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

### **13C—Edneytown loam, 7 to 15 percent slopes**

#### ***Composition***

Edneytown soil and similar components: 85 to 90 percent  
Dissimilar components: 10 to 15 percent

#### ***Setting***

*Depth class:* Very deep  
*Drainage class:* Well drained  
*Landform:* Mountain ridges  
*Landscape position:* Summits, shoulders, and back slopes  
*Parent material:* Residuum derived from gneiss, granite, and granodiorite  
*Shape of areas:* Irregular  
*Size of areas:* 5 to 50 acres

#### ***Typical Profile***

0 to 7 inches—very dark grayish brown loam  
7 to 34 inches—strong brown loam  
34 to 60 inches—strong brown and yellowish brown sandy loam saprolite

#### ***Minor Components***

##### *Dissimilar:*

- Hayesville soils that have a subsoil of red clay and are in landscape positions similar to those of the Edneytown soil
- Areas that have a very stony surface layer

##### *Similar:*

- The well drained and somewhat excessively drained Occoquan soils that have a solum that is thinner than that of the Edneytown soil and are in similar landscape positions

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

### **13D—Edneytown loam, 15 to 25 percent slopes**

#### ***Composition***

Edneytown soil and similar components: 85 to 90 percent  
Dissimilar components: 10 to 15 percent

**Setting**

*Depth class:* Very deep  
*Drainage class:* Well drained  
*Landform:* Mountain ridges  
*Landscape position:* Back slopes  
*Parent material:* Residuum derived from gneiss, granite, and granodiorite  
*Shape of areas:* Irregular  
*Size of areas:* 5 to 100 acres

**Typical Profile**

0 to 7 inches—very dark grayish brown loam  
 7 to 34 inches—strong brown loam  
 34 to 60 inches—strong brown and yellowish brown sandy loam saprolite

**Minor Components***Dissimilar:*

- Hayesville soils that have a subsoil of red clay and are in landscape positions similar to those of the Edneytown soil
- Areas that have a very stony surface layer

*Similar:*

- The well drained and somewhat excessively drained Occoquan soils that have a solum that is thinner than that of the Edneytown soil and are in similar landscape positions

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

**13E—Edneytown loam, 25 to 50 percent slopes****Composition**

Edneytown soil and similar components: 85 to 90 percent  
 Dissimilar components: 10 to 15 percent

**Setting**

*Depth class:* Very deep  
*Drainage class:* Well drained  
*Landform:* Mountain ridges  
*Landscape position:* Back slopes  
*Parent material:* Residuum derived from gneiss, granite, and granodiorite  
*Shape of areas:* Irregular  
*Size of areas:* 5 to 200 acres

**Typical Profile**

0 to 7 inches—very dark grayish brown loam  
 7 to 34 inches—strong brown loam  
 34 to 60 inches—strong brown and yellowish brown sandy loam saprolite

**Minor Components***Dissimilar:*

- Hayesville soils that have a subsoil of red clay and are in landscape positions similar to those of the Edneytown soil
- Areas that have a very stony surface layer

*Similar:*

- The well drained and somewhat excessively drained Occoquan soils that have a solum that is thinner than that of the Edneytown soil and are in similar landscape positions

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

**14C—Edneytown-Peaks complex, 7 to 15 percent slopes, extremely stony****Composition**

Edneytown soil and similar components: 55 to 60 percent  
 Peaks soil and similar components: 30 to 35 percent  
 Dissimilar components: 5 to 15 percent

**Setting**

*Depth class:* Edneytown—very deep; Peaks—moderately deep  
*Drainage class:* Edneytown—well drained; Peaks—somewhat excessively drained  
*Landform:* Mountain ridges  
*Landscape position:* Summits, shoulders, and back slopes  
*Parent material:* Residuum derived from gneiss, granite, and granodiorite  
*Shape of areas:* Irregular  
*Size of areas:* 5 to 100 acres  
*Surface cover:* 3 to 15 percent stones

**Typical Profile****Edneytown**

0 to 7 inches—very dark grayish brown loam

7 to 34 inches—strong brown loam  
 34 to 60 inches—strong brown and yellowish brown  
 sandy loam saprolite

#### **Peaks**

0 to 2 inches—very dark grayish brown very gravelly  
 loam  
 2 to 7 inches—dark yellowish brown very gravelly  
 loam  
 7 to 25 inches—strong brown very gravelly loam  
 25 to 36 inches—slightly weathered granodiorite that  
 crushes to yellowish brown extremely channery  
 loam  
 36 inches—hard granodiorite bedrock

#### **Minor Components**

##### *Dissimilar:*

- Hayesville soils that have a subsoil of red clay and are in landscape positions similar to those of the Edneytown and Peaks soils
- Areas that have a very stony surface layer

##### *Similar:*

- The well drained and somewhat excessively drained Occoquan soils that have a solum that is thinner than that of the Edneytown and Peaks soils and are in similar landscape positions

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

### **14D—Edneytown-Peaks complex, 15 to 35 percent slopes, extremely stony**

#### **Composition**

Edneytown soil and similar components: 55 to 60 percent  
 Peaks soil and similar components: 30 to 35 percent  
 Dissimilar components: 5 to 15 percent

#### **Setting**

*Depth class:* Edneytown—very deep; Peaks—moderately deep  
*Drainage class:* Edneytown—well drained; Peaks—somewhat excessively drained  
*Landform:* Mountain ridges  
*Landscape position:* Back slopes  
*Parent material:* Residuum derived from gneiss, granite, and granodiorite  
*Shape of areas:* Irregular

*Size of areas:* 5 to 200 acres  
*Surface cover:* 3 to 15 percent stones

#### **Typical Profile**

#### **Edneytown**

0 to 7 inches—very dark grayish brown loam  
 7 to 34 inches—strong brown loam  
 34 to 60 inches—strong brown and yellowish brown  
 sandy loam saprolite

#### **Peaks**

0 to 2 inches—very dark grayish brown very gravelly  
 loam  
 2 to 7 inches—dark yellowish brown very gravelly  
 loam  
 7 to 25 inches—strong brown very gravelly loam  
 25 to 36 inches—slightly weathered granodiorite that  
 crushes to yellowish brown extremely channery  
 loam  
 36 inches—hard granodiorite bedrock

#### **Minor Components**

##### *Dissimilar:*

- Saunook soils that have a surface layer that is darker than that of the Edneytown and Peaks soils and that are on back slopes and foot slopes
- Areas that do not have a stony surface layer

##### *Similar:*

- The well drained and somewhat excessively drained Occoquan soils in landscape positions similar to those of the Edneytown and Peaks soils
- Areas that have a surface layer that is darker than that of the Edneytown and Peaks soils

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils” (fig. 3).

### **14E—Edneytown-Peaks complex, 35 to 55 percent slopes, extremely stony**

#### **Composition**

Edneytown soil and similar components: 55 to 60 percent  
 Peaks soil and similar components: 30 to 35 percent  
 Dissimilar components: 5 to 15 percent

#### **Setting**

*Depth class:* Edneytown—very deep; Peaks—moderately deep



Figure 3.—Pasture in an area of Edneytown-Peaks complex, 15 to 35 percent slopes, extremely stony, and Saunook loam, 7 to 15 percent slopes, very stony.

*Drainage class:* Edneytown—well drained; Peaks—somewhat excessively drained

*Landform:* Mountain ridges

*Landscape position:* Back slopes

*Parent material:* Residuum derived from gneiss, granite, and granodiorite

*Shape of areas:* Irregular

*Size of areas:* 5 to 500 acres

*Surface cover:* 3 to 15 percent stones

### ***Typical Profile***

#### **Edneytown**

0 to 7 inches—very dark grayish brown loam

7 to 34 inches—strong brown loam

34 to 60 inches—strong brown and yellowish brown sandy loam saprolite

#### **Peaks**

0 to 2 inches—very dark grayish brown very gravelly loam

2 to 7 inches—dark yellowish brown very gravelly loam

7 to 25 inches—strong brown very gravelly loam

25 to 36 inches—slightly weathered granodiorite that crushes to yellowish brown extremely channery loam

36 inches—hard granodiorite bedrock

### ***Minor Components***

#### ***Dissimilar:***

- Saunook soils that have a surface layer that is darker than that of the Edneytown and Peaks soils and that are on back slopes and foot slopes
- Areas that do not have a stony surface layer

*Similar:*

- The well drained and somewhat excessively drained Occoquan soils in landscape positions similar to those of the Edneytown and Peaks soils
- Areas that have a surface layer that is darker than that of the Edneytown and Peaks soils

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

### **14F—Edneytown-Peaks complex, 55 to 75 percent slopes, extremely stony**

#### ***Composition***

Edneytown soil and similar components: 55 to 60 percent

Peaks soil and similar components: 30 to 35 percent

Dissimilar components: 5 to 15 percent

#### ***Setting***

*Depth class:* Edneytown—very deep; Peaks—moderately deep

*Drainage class:* Edneytown—well drained; Peaks—somewhat excessively drained

*Landform:* Mountain ridges

*Landscape position:* Back slopes

*Parent material:* Residuum derived from gneiss, granite, and granodiorite

*Shape of areas:* Irregular

*Size of areas:* 5 to 500 acres; most areas are in the George Washington National Forest

*Surface cover:* 3 to 15 percent stones

#### ***Typical Profile***

##### **Edneytown**

0 to 7 inches—very dark grayish brown loam

7 to 34 inches—strong brown loam

34 to 60 inches—strong brown and yellowish brown sandy loam saprolite

##### **Peaks**

0 to 2 inches—very dark grayish brown very gravelly loam

2 to 7 inches—dark yellowish brown very gravelly loam

7 to 25 inches—strong brown very gravelly loam

25 to 36 inches—slightly weathered granodiorite that crushes to yellowish brown extremely channery loam

36 inches—hard granodiorite bedrock

### ***Minor Components***

*Dissimilar:*

- Saunook soils that have a surface layer that is darker than that of the Edneytown and Peaks soils and that are on back slopes and foot slopes
- Areas that do not have a stony surface layer

*Similar:*

- The well drained and somewhat excessively drained Occoquan soils in landscape positions similar to those of the Edneytown and Peaks soils
- Areas that have a surface layer that is darker than that of the Edneytown and Peaks soils

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

### **15B—Elioak loam, 2 to 7 percent slopes**

#### ***Composition***

Elioak soil and similar components: 85 to 90 percent

Dissimilar components: 10 to 15 percent

#### ***Setting***

*Depth class:* Very deep

*Drainage class:* Well drained

*Landform:* Uplands

*Landscape position:* Summits and shoulders

*Parent material:* Residuum derived from phyllite, schist, and inclusions of sandstone

*Shape of areas:* Irregular

*Size of areas:* 5 to 100 acres

#### ***Typical Profile***

0 to 3 inches—dark yellowish brown loam

3 to 8 inches—brown loam

8 to 26 inches—red clay

26 to 40 inches—red clay loam

40 to 60 inches—variegated strong brown and red loam saprolite

### ***Minor Components***

*Dissimilar:*

- The well drained Glenelg soils that have a yellowish brown and strong brown subsoil containing less clay than that of the Elioak soil and that are in similar landscape positions
- The moderately well drained Delanco soils on foot slopes in drainageways
- The excessively drained, moderately deep Hazel

soils in landscape positions similar to those of the Elioak soil, in areas near the boundaries of delineations

*Similar:*

- Hayesville soils that have granite and quartz rock fragments and are in landscape positions similar to those of the Elioak soil
- Eroded areas that have a surface layer of clay loam
- Areas that have parent material of sandstone residuum

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

### 15C—Elioak loam, 7 to 15 percent slopes

#### **Composition**

Elioak soil and similar components: 85 to 90 percent  
Dissimilar components: 10 to 15 percent

#### **Setting**

*Depth class:* Very deep  
*Drainage class:* Well drained  
*Landform:* Uplands  
*Landscape position:* Shoulders and back slopes  
*Parent material:* Residuum derived from phyllite, schist, and inclusions of sandstone  
*Shape of areas:* Irregular  
*Size of areas:* 5 to 100 acres

#### **Typical Profile**

0 to 3 inches—dark yellowish brown loam  
3 to 8 inches—brown loam  
8 to 26 inches—red clay  
26 to 40 inches—red clay loam  
40 to 63 inches—variegated strong brown and red loam saprolite

#### **Minor Components**

*Dissimilar:*

- The well drained Glenelg soils that have a yellowish brown and strong brown subsoil containing less clay than that of the Elioak soil and that are in similar landscape positions
- The moderately well drained Delanco soils on foot slopes in drainageways
- The excessively drained, moderately deep Hazel soils in landscape positions similar to those of the Elioak soil, in areas near the boundaries of delineations

*Similar:*

- Hayesville soils that have granite and quartz rock fragments and are in landscape positions similar to those of the Elioak soil
- Eroded areas that have a surface layer of clay loam
- Areas that have parent material of sandstone residuum

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

### 15D—Elioak loam, 15 to 25 percent slopes

#### **Composition**

Elioak soil and similar components: 85 to 90 percent  
Dissimilar components: 10 to 15 percent

#### **Setting**

*Depth class:* Very deep  
*Drainage class:* Well drained  
*Landform:* Uplands  
*Landscape position:* Back slopes  
*Parent material:* Residuum derived from phyllite, schist, and inclusions of sandstone  
*Shape of areas:* Irregular  
*Size of areas:* 5 to 100 acres

#### **Typical Profile**

0 to 3 inches—dark yellowish brown loam  
3 to 8 inches—brown loam  
8 to 26 inches—red clay  
26 to 40 inches—red clay loam  
40 to 63 inches—variegated strong brown and red loam saprolite

#### **Minor Components**

*Dissimilar:*

- The well drained Glenelg soils that have a yellowish brown and strong brown subsoil containing less clay than that of the Elioak soil and that are in similar landscape positions
- The moderately well drained Delanco soils on foot slopes in drainageways
- The excessively drained, moderately deep Hazel soils in landscape positions similar to those of the Elioak soil, in areas near the boundaries of delineations

*Similar:*

- Hayesville soils that have granite and quartz rock

fragments and are in landscape positions similar to those of the Elioak soil

- Eroded areas that have a surface layer of clay loam
- Areas that have parent material of sandstone residuum

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

### **16C—Elioak clay loam, 7 to 15 percent slopes, severely eroded**

#### ***Composition***

Elioak soil and similar components: 85 to 90 percent  
Dissimilar components: 10 to 15 percent

#### ***Setting***

*Depth class:* Very deep

*Drainage class:* Well drained

*Landform:* Uplands

*Landscape position:* Shoulders and back slopes

*Parent material:* Residuum derived from phyllite, schist, and inclusions of sandstone

*Shape of areas:* Irregular

*Size of areas:* 5 to 100 acres

#### ***Typical Profile***

0 to 6 inches—strong brown clay loam

6 to 26 inches—red clay

26 to 40 inches—red clay loam

40 to 63 inches—variegated strong brown and red loam saprolite

#### ***Minor Components***

*Dissimilar:*

- The well drained Glenelg soils that have a yellowish brown and strong brown subsoil containing less clay than that of the Elioak soil and that are in similar landscape positions
- The moderately well drained Delanco soils on foot slopes in drainageways
- The excessively drained, moderately deep Hazel soils in landscape positions similar to those of the Elioak soil, in areas near the boundaries of delineations

*Similar:*

- Hayesville soils that have granite and quartz rock

fragments and are in landscape positions similar to those of the Elioak soil

- Noneroded areas that have a surface layer of loam
- Areas that have parent material of sandstone residuum

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

### **16D—Elioak clay loam, 15 to 25 percent slopes, severely eroded**

#### ***Composition***

Elioak soil and similar components: 85 to 90 percent  
Dissimilar components: 10 to 15 percent

#### ***Setting***

*Depth class:* Very deep

*Drainage class:* Well drained

*Landform:* Uplands

*Landscape position:* Back slopes

*Parent material:* Residuum derived from phyllite, schist, and inclusions of sandstone

*Shape of areas:* Irregular

*Size of areas:* 5 to 100 acres

#### ***Typical Profile***

0 to 6 inches—strong brown clay loam

6 to 26 inches—red clay

26 to 40 inches—red clay loam

40 to 63 inches—variegated strong brown and red loam saprolite

#### ***Minor Components***

*Dissimilar:*

- The well drained Glenelg soils that have a yellowish brown and strong brown subsoil containing less clay than that of the Elioak soil and that are in similar landscape positions
- The moderately well drained Delanco soils on foot slopes in drainageways
- The excessively drained, moderately deep Hazel soils in landscape positions similar to those of the Elioak soil, in areas near the boundaries of delineations

*Similar:*

- Hayesville soils that have granite and quartz rock

fragments and are in landscape positions similar to those of the Elioak soil

- Noneroded areas that have a surface layer of loam
- Areas that have parent material of sandstone residuum

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

### **17B—Elsinboro loam, 2 to 7 percent slopes, rarely flooded**

#### ***Composition***

Elsinboro soil and similar components: 85 to 95 percent

Dissimilar components: 5 to 15 percent

#### ***Setting***

*Depth class:* Very deep

*Drainage class:* Well drained

*Landform:* Stream terraces

*Landscape position:* Stream terrace treads

*Parent material:* Alluvium

*Shape of areas:* Irregular to linear

*Size of areas:* 5 to 50 acres

#### ***Typical Profile***

0 to 11 inches—dark yellowish brown loam

11 to 38 inches—strong brown clay loam

38 to 55 inches—strong brown sandy clay loam

55 to 72 inches—strong brown sandy clay loam that has brown iron depletions

#### ***Minor Components***

*Dissimilar:*

- The moderately well drained Suches soils on flood plains
- The somewhat poorly drained Codorus soils in slight depressions on flood plains

*Similar:*

- The well drained Delanco soils in landscape positions similar to those of the Elsinboro soil

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

### **18C—Fauquier loam, 7 to 15 percent slopes, very stony**

#### ***Composition***

Fauquier soil and similar components: 85 to 90 percent

Dissimilar components: 10 to 15 percent

#### ***Setting***

*Depth class:* Deep

*Drainage class:* Well drained

*Landform:* Uplands

*Landscape position:* Summits, shoulders, and back slopes

*Parent material:* Residuum derived from greenstone, gabbro, and diorite

*Shape of areas:* Irregular

*Size of areas:* 5 to 100 acres

*Surface cover:* 0.1 to 3 percent stones

#### ***Typical Profile***

0 to 6 inches—brown loam

6 to 40 inches—red clay

40 to 50 inches—slightly weathered soft gabbro bedrock that crushes to reddish yellow loam

50 inches—hard gabbro bedrock

#### ***Minor Components***

*Dissimilar:*

- The very deep Minnieville soils in landscape positions similar to those of the Fauquier soil
- Spriggs soils that have less clay in the subsoil than the Fauquier soil and are in similar landscape positions

*Similar:*

- Areas that do not have stones on the surface

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

### **18D—Fauquier loam, 15 to 25 percent slopes, very stony**

#### ***Composition***

Fauquier soil and similar components: 85 to 90 percent

Dissimilar components: 10 to 15 percent

**Setting**

*Depth class:* Deep  
*Drainage class:* Well drained  
*Landform:* Uplands  
*Landscape position:* Back slopes  
*Parent material:* Residuum derived from greenstone, gabbro, and diorite  
*Shape of areas:* Irregular  
*Size of areas:* 5 to 100 acres  
*Surface cover:* 0.1 to 3 percent stones

**Typical Profile**

0 to 6 inches—brown loam  
 6 to 40 inches—red clay  
 40 to 50 inches—slightly weathered soft gabbro bedrock that crushes to reddish yellow loam  
 50 inches—hard gabbro bedrock

**Minor Components***Dissimilar:*

- The very deep Minnieville soils in landscape positions similar to those of the Fauquier soil
- Spriggs soils that have less clay in the subsoil than the Fauquier soil and are in similar landscape positions

*Similar:*

- Areas that do not have stones on the surface

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

**18E—Fauquier loam, 25 to 50 percent slopes, very stony****Composition**

Fauquier soil and similar components: 85 to 90 percent  
 Dissimilar components: 10 to 15 percent

**Setting**

*Depth class:* Deep  
*Drainage class:* Well drained  
*Landform:* Uplands  
*Landscape position:* Back slopes  
*Parent material:* Residuum derived from greenstone, gabbro, and diorite  
*Shape of areas:* Irregular  
*Size of areas:* 5 to 200 acres  
*Surface cover:* 0.1 to 3 percent stones

**Typical Profile**

0 to 6 inches—brown loam  
 6 to 40 inches—red clay  
 40 to 50 inches—slightly weathered soft gabbro bedrock that crushes to reddish yellow loam  
 50 inches—hard gabbro bedrock

**Minor Components***Dissimilar:*

- The very deep Minnieville soils in landscape positions similar to those of the Fauquier soil
- Spriggs soils that have less clay in the subsoil than the Fauquier soil and are in similar landscape positions

*Similar:*

- Areas that do not have stones on the surface

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

**19A—Galtsmill fine sandy loam, 0 to 2 percent slopes, occasionally flooded****Composition**

Galtsmill soil and similar components: 85 to 90 percent  
 Dissimilar components: 10 to 15 percent

**Setting**

*Depth class:* Very deep  
*Drainage class:* Well drained  
*Landform:* Flood plains  
*Landscape position:* Higher positions on flood plains in areas adjacent to streams  
*Parent material:* Recent alluvium  
*Shape of areas:* Irregular to linear  
*Size of areas:* 5 to 25 acres

**Typical Profile**

0 to 15 inches—very dark grayish brown fine sandy loam  
 15 to 72 inches—brown loam and fine sandy loam

**Minor Components***Dissimilar:*

- Wingina soils that have more clay in the subsoil than the Galtsmill soil and are in similar landscape positions
- The somewhat poorly drained Batteau soils in

landscape positions similar to those of the Galtmill soil

- The poorly drained Yogaville soils in depressions and other low areas of flood plains

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

## **20D—Glenelg silt loam, 15 to 25 percent slopes**

### ***Composition***

Glenelg soil and similar components: 85 to 90 percent  
Dissimilar components: 10 to 15 percent

### ***Setting***

*Depth class:* Very deep

*Drainage class:* Well drained

*Landform:* Uplands

*Landscape position:* Back slopes

*Parent material:* Residuum derived from phyllite, schist, and inclusions of sandstone

*Shape of areas:* Irregular

*Size of areas:* 5 to 30 acres

### ***Typical Profile***

0 to 4 inches—dark yellowish brown silt loam

4 to 9 inches—yellowish brown loam

9 to 27 inches—yellowish red clay loam that has yellowish brown and brownish yellow lithochromic masses

27 to 65 inches—variegated red, reddish yellow, yellowish brown, and pale brown loam saprolite

### ***Minor Components***

*Dissimilar:*

- Elioak soils that have a subsoil of red clay and are in landscape positions similar to those of the Glenelg soil
- The well drained and somewhat excessively drained, moderately deep Hazel soils in landscape positions similar to those of the Glenelg soil

*Similar:*

- Areas that have a surface layer of loam

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

## **21A—Hatboro loam, 0 to 2 percent slopes, frequently flooded**

### ***Composition***

Hatboro soil and similar components: 85 to 90 percent  
Dissimilar components: 10 to 15 percent

### ***Setting***

*Depth class:* Very deep

*Drainage class:* Poorly drained

*Landform:* Flood plains

*Landscape position:* Depressions and areas at the base of adjacent terraces and uplands

*Parent material:* Recent alluvium

*Shape of areas:* Irregular to linear

*Size of areas:* 5 to 50 acres

### ***Typical Profile***

0 to 12 inches—dark grayish brown loam that has strong brown and yellowish red iron masses

12 to 50 inches—dark gray and gray clay loam that has strong brown and yellowish brown iron masses

50 to 65 inches—light brownish gray sandy clay loam that has yellowish brown and strong brown iron masses

65 to 70 inches—light brownish gray stratified fine sandy loam and gravel having yellowish brown iron masses

### ***Minor Components***

*Dissimilar:*

- The moderately well drained Suches soils in landscape positions similar to those of the Hatboro soil
- The somewhat poorly drained Codorus soils in landscape positions similar to those of the Hatboro soil

*Similar:*

- Areas that have a surface layer that is darker than that of the Hatboro soil
- Areas that have a sandy subsoil
- Areas that have cobbles in the subsoil and substratum
- Areas that have a gravelly surface layer

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

## 22B—Hayesville loam, 2 to 7 percent slopes

### **Composition**

Hayesville soil and similar components: 85 to 95 percent

Dissimilar components: 5 to 15 percent

### **Setting**

*Depth class:* Very deep

*Drainage class:* Well drained

*Landform:* Uplands

*Landscape position:* Summits and shoulders

*Parent material:* Residuum derived from gneiss and granite

*Shape of areas:* Irregular

*Size of areas:* 5 to 100 acres

### **Typical Profile**

0 to 6 inches—brown loam

6 to 40 inches—red clay

40 to 57 inches—red clay loam

57 to 62 inches—red loam saprolite

### **Minor Components**

*Dissimilar:*

- Delanco soils that have less clay than the Hayesville soil and are on foot slopes in drainageways of terraces and fans
- The well drained and somewhat excessively drained Occoquan soils that have less clay in the subsoil than the Hayesville soil and are on the edges of delineations

*Similar:*

- Areas that have a strong brown subsoil
- Eroded areas that have a surface layer of clay loam

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

## 22C—Hayesville loam, 7 to 15 percent slopes

### **Composition**

Hayesville soil and similar components: 85 to 95 percent

Dissimilar components: 5 to 15 percent

### **Setting**

*Depth class:* Very deep

*Drainage class:* Well drained

*Landform:* Uplands

*Landscape position:* Shoulders and back slopes

*Parent material:* Residuum derived from gneiss and granite

*Shape of areas:* Irregular

*Size of areas:* 5 to 100 acres

### **Typical Profile**

0 to 6 inches—brown loam

6 to 40 inches—red clay

40 to 57 inches—red clay loam

57 to 62 inches—red loam saprolite

### **Minor Components**

*Dissimilar:*

- Wintergreen soils that formed in colluvial material and are in landscape positions similar to those of the Hayesville soil
- Delanco soils that have less clay than the Hayesville soil and are on foot slopes in drainageways of terraces and fans
- The well drained and somewhat excessively drained Occoquan soils that have less clay in the subsoil than the Hayesville soil and are on the edges of delineations

*Similar:*

- Areas that have a strong brown subsoil
- Eroded areas that have a surface layer of clay loam

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils” (fig. 4).

## 22D—Hayesville loam, 15 to 25 percent slopes

### **Composition**

Hayesville soil and similar components: 85 to 95 percent

Dissimilar components: 5 to 15 percent

### **Setting**

*Depth class:* Very deep

*Drainage class:* Well drained

*Landform:* Uplands

*Landscape position:* Back slopes



Figure 4.—Small grain on Hayesville loam, 7 to 15 percent slopes, in the foreground; orchards and mixed hardwoods on Wintergreen loam, 15 to 25 percent slopes, in the middle ground; and mixed hardwoods and pines on Edneytown-Peaks complex, 35 to 55 percent slopes, extremely stony, in the background.

*Parent material:* Residuum derived from gneiss and granite

*Shape of areas:* Irregular

*Size of areas:* 5 to 100 acres

#### ***Typical Profile***

0 to 6 inches—brown loam

6 to 40 inches—red clay

40 to 57 inches—red clay loam

57 to 62 inches—red loam saprolite

#### ***Minor Components***

*Dissimilar:*

- Wintergreen soils that formed in colluvial material

and are in landscape positions similar to those of the Hayesville soil

- Delanco soils that have less clay than the Hayesville soil and are on foot slopes in drainageways of terraces and fans
- The well drained and somewhat excessively drained Occoquan soils that have less clay in the subsoil than the Hayesville soil and are on the edges of delineations

*Similar:*

- Areas that have a strong brown subsoil
- Eroded areas that have a surface layer of clay loam

Additional information specific to the soils in this map unit is available in the section “Soil Properties.”

For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

### **22E—Hayesville loam, 25 to 50 percent slopes**

#### ***Composition***

Hayesville soil and similar components: 85 to 95 percent  
Dissimilar components: 5 to 15 percent

#### ***Setting***

*Depth class:* Very deep  
*Drainage class:* Well drained  
*Landform:* Uplands  
*Landscape position:* Back slopes  
*Parent material:* Residuum derived from gneiss and granite  
*Shape of areas:* Irregular  
*Size of areas:* 5 to 50 acres

#### ***Typical Profile***

0 to 6 inches—brown loam  
6 to 40 inches—red clay  
40 to 57 inches—red clay loam  
57 to 62 inches—red loam saprolite

#### ***Minor Components***

##### *Dissimilar:*

- Wintergreen soils that formed in colluvial material and are in landscape positions similar to those of the Hayesville soil
- Delanco soils that have less clay than the Hayesville soil and are on foot slopes in drainageways of terraces and fans
- The well drained and somewhat excessively drained Occoquan soils that have less clay in the subsoil than the Hayesville soil and are on the edges of delineations

##### *Similar:*

- Areas that have a strong brown subsoil
- Eroded areas that have a surface layer of clay loam

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

### **23B—Hayesville clay loam, 2 to 7 percent slopes, severely eroded**

#### ***Composition***

Hayesville soil and similar components: 85 to 95 percent  
Dissimilar components: 5 to 15 percent

#### ***Setting***

*Depth class:* Very deep  
*Drainage class:* Well drained  
*Landform:* Uplands  
*Landscape position:* Summits and shoulders  
*Parent material:* Residuum derived from gneiss and granite  
*Shape of areas:* Irregular  
*Size of areas:* 5 to 100 acres

#### ***Typical Profile***

0 to 6 inches—brown clay loam  
6 to 40 inches—red clay  
40 to 57 inches—red clay loam  
57 to 62 inches—red loam saprolite

#### ***Minor Components***

##### *Dissimilar:*

- Delanco soils that have less clay than the Hayesville soil and are on foot slopes in drainageways of terraces and fans
- The well drained and somewhat excessively drained Occoquan soils that have less clay in the subsoil than the Hayesville soil and are on the edges of delineations

##### *Similar:*

- Areas that have a strong brown subsoil
- Noneroded areas that have a surface layer of loam

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils” (fig. 5).

### **23C—Hayesville clay loam, 7 to 15 percent slopes, severely eroded**

#### ***Composition***

Hayesville soil and similar components: 85 to 95 percent  
Dissimilar components: 5 to 15 percent



Figure 5.—Corn and small grain on Hayesville clay loam, 2 to 7 percent slopes, severely eroded.

### ***Setting***

*Depth class:* Very deep

*Drainage class:* Well drained

*Landform:* Uplands

*Landscape position:* Shoulders and back slopes

*Parent material:* Residuum derived from gneiss and granite

*Shape of areas:* Irregular

*Size of areas:* 5 to 50 acres

### ***Typical Profile***

0 to 6 inches—brown clay loam

6 to 40 inches—red clay

40 to 57 inches—red clay loam

57 to 62 inches—red loam saprolite

### ***Minor Components***

*Dissimilar:*

- Wintergreen soils that formed in colluvial material

and are in landscape positions similar to those of the Hayesville soil

- Delanco soils that have less clay than the Hayesville soil and are on foot slopes in drainageways of terraces and fans
- The well drained and somewhat excessively drained Occoquan soils that have less clay in the subsoil than the Hayesville soil and are on the edges of delineations

*Similar:*

- Areas that have a strong brown subsoil
- Noneroded areas that have a surface layer of loam

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

### **23D—Hayesville clay loam, 15 to 25 percent slopes, severely eroded**

#### ***Composition***

Hayesville soil and similar components: 85 to 95 percent

Dissimilar components: 5 to 15 percent

#### ***Setting***

*Depth class:* Very deep

*Drainage class:* Well drained

*Landform:* Uplands

*Landscape position:* Back slopes

*Parent material:* Residuum derived from gneiss and granite

*Shape of areas:* Irregular

*Size of areas:* 5 to 50 acres

#### ***Typical Profile***

0 to 6 inches—brown clay loam

6 to 40 inches—red clay

40 to 57 inches—red clay loam

57 to 62 inches—red loam saprolite

#### ***Minor Components***

##### *Dissimilar:*

- Wintergreen soils that formed in colluvial material and are in landscape positions similar to those of the Hayesville soil
- Delanco soils that have less clay than the Hayesville soil and are on foot slopes in drainageways of terraces and fans
- The well drained and somewhat excessively drained Occoquan soils that have less clay in the subsoil than the Hayesville soil and are on the edges of delineations

##### *Similar:*

- Areas that have a strong brown subsoil
- Noneroded areas that have a surface layer of loam

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

### **23E—Hayesville clay loam, 25 to 50 percent slopes, severely eroded**

#### ***Composition***

Hayesville soil and similar components: 85 to 95 percent

Dissimilar components: 5 to 15 percent

#### ***Setting***

*Depth class:* Very deep

*Drainage class:* Well drained

*Landform:* Uplands

*Landscape position:* Back slopes

*Parent material:* Residuum derived from gneiss and granite

*Shape of areas:* Irregular

*Size of areas:* 5 to 50 acres

#### ***Typical Profile***

0 to 6 inches—brown clay loam

6 to 40 inches—red clay

40 to 57 inches—red clay loam

57 to 62 inches—red loam saprolite

#### ***Minor Components***

##### *Dissimilar:*

- Wintergreen soils that formed in colluvial material and are in landscape positions similar to those of the Hayesville soil
- Delanco soils that have less clay than the Hayesville soil and are on foot slopes in drainageways of terraces and fans
- The well drained and somewhat excessively drained Occoquan soils that have less clay in the subsoil than the Hayesville soil and are on the edges of delineations

##### *Similar:*

- Areas that have a strong brown subsoil
- Noneroded areas that have a surface layer of loam

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

### **24C—Hayesville loam, 7 to 15 percent slopes, very stony**

#### ***Composition***

Hayesville soil and similar components: 85 to 90 percent

Dissimilar components: 10 to 15 percent

#### ***Setting***

*Depth class:* Very deep

*Drainage class:* Well drained

*Landform:* Uplands

*Landscape position:* Shoulders and back slopes

*Parent material:* Residuum derived from gneiss and granite

*Shape of areas:* Irregular

*Size of areas:* 5 to 50 acres

*Surface cover:* 0.1 to 3 percent stones

### **Typical Profile**

0 to 6 inches—brown loam

6 to 40 inches—red clay

40 to 57 inches—red clay loam

57 to 62 inches—red loam saprolite

### **Minor Components**

#### *Dissimilar:*

- Wintergreen soils that formed in colluvial material and are in landscape positions similar to those of the Hayesville soil
- Delanco soils that have less clay than the Hayesville soil and are on foot slopes in drainageways of terraces and fans
- The well drained and somewhat excessively drained Occoquan soils that have less clay in the subsoil than the Hayesville soil and are on the edges of delineations

#### *Similar:*

- Areas that have a strong brown subsoil

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

## **24D—Hayesville loam, 15 to 25 percent slopes, very stony**

### **Composition**

Hayesville soil and similar components: 85 to 90 percent

Dissimilar components: 10 to 15 percent

### **Setting**

*Depth class:* Very deep

*Drainage class:* Well drained

*Landform:* Uplands

*Landscape position:* Back slopes

*Parent material:* Residuum derived from gneiss and granite

*Shape of areas:* Irregular

*Size of areas:* 5 to 50 acres

*Surface cover:* 0.1 to 3 percent stones

### **Typical Profile**

0 to 6 inches—brown loam

6 to 40 inches—red clay

40 to 57 inches—red clay loam

57 to 62 inches—red loam saprolite

### **Minor Components**

#### *Dissimilar:*

- Wintergreen soils that formed in colluvial material and are in landscape positions similar to those of the Hayesville soil
- Delanco soils that have less clay than the Hayesville soil and are on foot slopes in drainageways of terraces and fans
- The well drained and somewhat excessively drained Occoquan soils that have less clay in the subsoil than the Hayesville soil and are on the edges of delineations

#### *Similar:*

- Areas that have a strong brown subsoil

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

## **24E—Hayesville loam, 25 to 50 percent slopes, very stony**

### **Composition**

Hayesville soil and similar components: 85 to 90 percent

Dissimilar components: 10 to 15 percent

### **Setting**

*Depth class:* Very deep

*Drainage class:* Well drained

*Landform:* Uplands

*Landscape position:* Back slopes

*Parent material:* Residuum derived from gneiss and granite

*Shape of areas:* Irregular

*Size of areas:* 5 to 50 acres

*Surface cover:* 0.1 to 3 percent stones

### **Typical Profile**

0 to 6 inches—brown loam

6 to 40 inches—red clay

40 to 57 inches—red clay loam

57 to 62 inches—red loam saprolite

### **Minor Components**

#### *Dissimilar:*

- Wintergreen soils that formed in colluvial material and are in landscape positions similar to those of the Hayesville soil
- Delanco soils that have less clay than the Hayesville soil and are on foot slopes in drainageways of terraces and fans
- The well drained and somewhat excessively drained Occoquan soils that have less clay in the subsoil than the Hayesville soil and are on the edges of delineations

#### *Similar:*

- Areas that have a strong brown subsoil

Additional information specific to the soils in this map unit is available in the section "Soil Properties." For general and detailed information about managing the map unit, refer to the section "Use and Management of the Soils."

### **25C—Hazel channery loam, 7 to 15 percent slopes**

#### **Composition**

Hazel soil and similar components: 85 to 90 percent  
Dissimilar components: 10 to 15 percent

#### **Setting**

*Depth class:* Moderately deep

*Drainage class:* Excessively drained

*Landform:* Uplands

*Landscape position:* Nose slopes and back slopes

*Parent material:* Residuum derived from phyllite, schist, and sandstone

*Shape of areas:* Irregular

*Size of areas:* 5 to 50 acres

#### **Typical Profile**

0 to 5 inches—yellowish brown channery loam  
5 to 19 inches—strong brown channery sandy loam  
19 to 31 inches—light yellowish brown very channery sandy loam saprolite  
31 inches—hard graywacke sandstone bedrock

### **Minor Components**

#### *Dissimilar:*

- The well drained, very deep Elioak soils that have a subsoil of red clay and are in landscape positions similar to those of the Hazel soil
- The well drained, very deep Glenelg soils in landscape positions similar to those of the Hazel soil
- Areas that have stones on the surface

Additional information specific to the soils in this map unit is available in the section "Soil Properties." For general and detailed information about managing the map unit, refer to the section "Use and Management of the Soils."

### **25D—Hazel channery loam, 15 to 25 percent slopes**

#### **Composition**

Hazel soil and similar components: 85 to 90 percent  
Dissimilar components: 10 to 15 percent

#### **Setting**

*Depth class:* Moderately deep

*Drainage class:* Excessively drained

*Landform:* Uplands

*Landscape position:* Back slopes

*Parent material:* Residuum derived from phyllite, schist, and sandstone

*Shape of areas:* Irregular

*Size of areas:* 5 to 200 acres

#### **Typical Profile**

0 to 5 inches—yellowish brown channery loam  
5 to 19 inches—strong brown channery sandy loam  
19 to 31 inches—light yellowish brown very channery sandy loam saprolite  
31 inches—hard graywacke sandstone bedrock

### **Minor Components**

#### *Dissimilar:*

- The well drained, very deep Elioak soils that have a subsoil of red clay and are in landscape positions similar to those of the Hazel soil
- The well drained, very deep Glenelg soils in landscape positions similar to those of the Hazel soil
- Areas that have stones on the surface

Additional information specific to the soils in this map unit is available in the section "Soil Properties." For general and detailed information about managing the map unit, refer to the section "Use and Management of the Soils."

### **25E—Hazel channery loam, 25 to 50 percent slopes**

#### **Composition**

Hazel soil and similar components: 85 to 90 percent  
Dissimilar components: 10 to 15 percent

**Setting**

*Depth class:* Moderately deep

*Drainage class:* Excessively drained

*Landform:* Uplands

*Landscape position:* Back slopes

*Parent material:* Residuum derived from phyllite, schist, and sandstone

*Shape of areas:* Irregular

*Size of areas:* 5 to 200 acres

**Typical Profile**

0 to 5 inches—yellowish brown channery loam

5 to 19 inches—strong brown channery sandy loam

19 to 31 inches—light yellowish brown very channery sandy loam saprolite

31 inches—hard graywacke sandstone bedrock

**Minor Components**

*Dissimilar:*

- The well drained, very deep Elioak soils that have a subsoil of red clay and are in landscape positions similar to those of the Hazel soil
- The well drained, very deep Glenelg soils in landscape positions similar to those of the Hazel soil
- Areas that have stones on the surface

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

**26D—Hazel loam, 15 to 25 percent slopes, very stony****Composition**

Hazel soil and similar components: 85 to 90 percent

Dissimilar components: 10 to 15 percent

**Setting**

*Depth class:* Moderately deep

*Drainage class:* Excessively drained

*Landform:* Uplands

*Landscape position:* Back slopes

*Parent material:* Residuum derived from phyllite, schist, and sandstone

*Shape of areas:* Irregular

*Size of areas:* 5 to 200 acres

*Surface cover:* 0.1 to 3 percent stones

**Typical Profile**

0 to 5 inches—yellowish brown loam

5 to 19 inches—strong brown channery sandy loam

19 to 31 inches—light yellowish brown very channery sandy loam saprolite

31 inches—hard graywacke sandstone bedrock

**Minor Components**

*Dissimilar:*

- The well drained, very deep Elioak soils that have a subsoil of red clay and are in landscape positions similar to those of the Hazel soil
- The well drained, very deep Glenelg soils in landscape positions similar to those of the Hazel soil
- Areas that have stones on the surface and are in landscape positions similar to those of the Hazel soil
- Areas that do not have stones on the surface

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

**26E—Hazel loam, 25 to 50 percent slopes, very stony****Composition**

Hazel soil and similar components: 85 to 90 percent

Dissimilar components: 10 to 15 percent

**Setting**

*Depth class:* Moderately deep

*Drainage class:* Excessively drained

*Landform:* Uplands

*Landscape position:* Back slopes

*Parent material:* Residuum derived from phyllite, schist, and sandstone

*Shape of areas:* Irregular

*Size of areas:* 5 to 200 acres

*Surface cover:* 0.1 to 3 percent stones

**Typical Profile**

0 to 5 inches—yellowish brown loam

5 to 19 inches—strong brown channery sandy loam

19 to 31 inches—light yellowish brown very channery sandy loam saprolite

31 inches—hard graywacke sandstone bedrock

**Minor Components**

*Dissimilar:*

- The well drained, very deep Elioak soils that have a subsoil of red clay and are in landscape positions similar to those of the Hazel soil
- The well drained, very deep Glenelg soils in landscape positions similar to those of the Hazel soil

- Areas that have stones on the surface and are in landscape positions similar to those of the Hazel soil
- Areas that do not have stones on the surface
- Areas of Rock outcrop

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

### **27B—Jackland gravelly silt loam, 2 to 7 percent slopes**

#### ***Composition***

Jackland soil and similar components: 85 to 90 percent  
Dissimilar components: 10 to 15 percent

#### ***Setting***

*Depth class:* Very deep  
*Drainage class:* Somewhat poorly drained  
*Landform:* Uplands  
*Landscape position:* Summits, shoulders, and back slopes  
*Parent material:* Residuum derived from gabbro, diorite, and greenstone  
*Shape of areas:* Irregular  
*Size of areas:* 5 to 75 acres

#### ***Typical Profile***

0 to 9 inches—dark brown gravelly silt loam  
9 to 30 inches—dark yellowish brown clay that has black iron and manganese masses and grayish brown iron and manganese depletions  
30 to 61 inches—variegated light olive brown, pale yellow, and black sandy clay loam saprolite that has lenses of clay

#### ***Minor Components***

##### *Dissimilar:*

- The well drained Minnieville soils that have a subsoil of red clay and are in landscape positions similar to those of the Jackland soil
- The well drained Spriggs soils that have less clay in the subsoil than the Jackland soil and are in similar landscape positions
- Areas that have stones on the surface

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

### **27C—Jackland gravelly silt loam, 7 to 15 percent slopes**

#### ***Composition***

Jackland soil and similar components: 85 to 90 percent  
Dissimilar components: 10 to 15 percent

#### ***Setting***

*Depth class:* Very deep  
*Drainage class:* Somewhat poorly drained  
*Landform:* Uplands  
*Landscape position:* Shoulders and back slopes  
*Parent material:* Residuum derived from gabbro, diorite, and greenstone  
*Shape of areas:* Irregular  
*Size of areas:* 5 to 100 acres

#### ***Typical Profile***

0 to 9 inches—dark brown gravelly silt loam  
9 to 30 inches—dark yellowish brown clay that has black iron and manganese masses and grayish brown iron and manganese depletions  
30 to 61 inches—variegated light olive brown, pale yellow, and black sandy clay loam saprolite that has lenses of clay

#### ***Minor Components***

##### *Dissimilar:*

- The well drained Minnieville soils that have a subsoil of red clay and are in landscape positions similar to those of the Jackland soil
- The well drained Spriggs soils that have less clay in the subsoil than the Jackland soil and are in similar landscape positions
- Areas that have stones on the surface

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

### **28B—Lew silt loam, 2 to 7 percent slopes**

#### ***Composition***

Lew soil and similar components: 85 to 90 percent  
Dissimilar components: 10 to 15 percent

#### ***Setting***

*Depth class:* Very deep  
*Drainage class:* Well drained

*Landform:* Uplands and fans

*Landscape position:* Foot slopes

*Parent material:* Colluvium and local alluvium derived from greenstone

*Shape of areas:* Irregular to linear

*Size of areas:* 5 to 50 acres

### **Typical Profile**

0 to 8 inches—dark yellowish brown silt loam

8 to 36 inches—dark yellowish brown very channery silty clay loam

36 to 62 inches—strong brown extremely channery silty clay loam

### **Minor Components**

*Dissimilar:*

- Craigsville soils that have gravel and cobbles and are on flood plains
- Areas that have an extremely stony surface layer

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

## **29B—Low silt loam, 2 to 7 percent slopes, extremely stony**

### **Composition**

Low soil and similar components: 85 to 90 percent

Dissimilar components: 10 to 15 percent

### **Setting**

*Depth class:* Very deep

*Drainage class:* Well drained

*Landform:* Uplands and fans

*Landscape position:* Foot slopes

*Parent material:* Colluvium and local alluvium

*Shape of areas:* Irregular to linear

*Size of areas:* 5 to 75 acres

*Surface cover:* 0.1 to 3 percent cobbles and stones

### **Typical Profile**

0 to 8 inches—dark yellowish brown silt loam

8 to 36 inches—dark yellowish brown very channery silty clay loam

36 to 62 inches—strong brown extremely channery silty clay loam

### **Minor Components**

*Dissimilar:*

- Craigsville soils that have gravel and cobbles and are on flood plains

- Areas that do not have an extremely stony surface layer

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

## **30C—Low channery silt loam, 7 to 15 percent slopes, extremely bouldery**

### **Composition**

Low soil and similar components: 85 to 90 percent

Dissimilar components: 10 to 15 percent

### **Setting**

*Depth class:* Very deep

*Drainage class:* Well drained

*Landform:* Mountain ridges

*Landscape position:* Coves, saddles, and drainageways

*Parent material:* Colluvium derived from greenstone

*Shape of areas:* Irregular to linear

*Size of areas:* 5 to 200 acres

*Surface cover:* 3 to 15 percent boulders

### **Typical Profile**

0 to 8 inches—dark yellowish brown channery silt loam

8 to 36 inches—dark yellowish brown very channery silty clay loam

36 to 62 inches—strong brown extremely channery silty clay loam

### **Minor Components**

*Dissimilar:*

- Myersville soils that have fewer rock fragments in the subsoil than the Low soil and are in similar landscape positions
- The moderately deep Catoctin soils in landscape positions similar to those of the Low soil
- Areas that do not have a bouldery surface

*Similar:*

- Areas that have a very stony or extremely stony surface layer

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

### 30D—Low channery silt loam, 15 to 25 percent slopes, extremely bouldery

#### Composition

Low soil and similar components: 85 to 90 percent  
Dissimilar components: 10 to 15 percent

#### Setting

*Depth class:* Very deep  
*Drainage class:* Well drained  
*Landform:* Mountain ridges  
*Landscape position:* Coves, saddles, and drainageways  
*Parent material:* Colluvium derived from greenstone  
*Shape of areas:* Irregular to linear  
*Size of areas:* 5 to 200 acres  
*Surface cover:* 3 to 15 percent boulders

#### Typical Profile

0 to 8 inches—dark yellowish brown channery silt loam  
8 to 36 inches—dark yellowish brown very channery silty clay loam  
36 to 62 inches—strong brown extremely channery silty clay loam

#### Minor Components

##### Dissimilar:

- Myersville soils that have fewer rock fragments in the subsoil than the Lew soil and are in similar landscape positions
- The moderately deep Catoctin soils in landscape positions similar to those of the Lew soil
- Areas that do not have a bouldery surface

##### Similar:

- Areas that have a very stony or extremely stony surface layer

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

### 30E—Low channery silt loam, 25 to 75 percent slopes, extremely bouldery

#### Composition

Low soil and similar components: 85 to 90 percent  
Dissimilar components: 10 to 15 percent

#### Setting

*Depth class:* Very deep  
*Drainage class:* Well drained  
*Landform:* Mountain ridges  
*Landscape position:* Coves, saddles, and drainageways  
*Parent material:* Colluvium derived from greenstone  
*Shape of areas:* Irregular to linear  
*Size of areas:* 5 to 200 acres  
*Surface cover:* 3 to 15 percent boulders

#### Typical Profile

0 to 8 inches—dark yellowish brown channery silt loam  
8 to 36 inches—dark yellowish brown very channery silty clay loam  
36 to 62 inches—strong brown extremely channery silty clay loam

#### Minor Components

##### Dissimilar:

- Myersville soils that have fewer rock fragments in the subsoil than the Lew soil and are in similar landscape positions
- The moderately deep Catoctin soils in landscape positions similar to those of the Lew soil
- Areas that do not have a bouldery surface

##### Similar:

- Areas that have a very stony or extremely stony surface layer

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

### 31B—Littlejoe silt loam, 2 to 7 percent slopes

#### Composition

Littlejoe soil and similar components: 85 to 95 percent  
Dissimilar components: 5 to 15 percent

#### Setting

*Depth class:* Deep  
*Drainage class:* Well drained  
*Landform:* Uplands  
*Landscape position:* Summits, shoulders, and back slopes  
*Parent material:* Residuum derived from sericite schist and other fine-grained rock

*Shape of areas:* Irregular

*Size of areas:* 5 to 100 acres

### **Typical Profile**

0 to 2 inches—yellowish brown silt loam

2 to 8 inches—brownish yellow loam

8 to 28 inches—red silty clay

28 to 41 inches—red silty clay loam that has yellowish red lithochromic masses

41 to 65 inches—slightly weathered soft sericite schist bedrock that crushes to reddish brown silt loam

### **Minor Components**

*Dissimilar:*

- The very deep Wintergreen soils that formed in colluvial material and are in landscape positions similar to those of the Littlejoe soil
- The very deep Delanco soils that formed in alluvium and are on foot slopes in drainageways
- The excessively drained, shallow Bugley soils on the edges of delineations

*Similar:*

- Buffstat soils that have a reddish yellow subsoil and are in landscape positions similar to those of the Littlejoe soil
- Eroded areas that have a surface layer of clay loam
- Soils that are underlain by phyllite bedrock

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

## **31C—Littlejoe silt loam, 7 to 15 percent slopes**

### **Composition**

Littlejoe soil and similar components: 85 to 95 percent  
Dissimilar components: 5 to 15 percent

### **Setting**

*Depth class:* Deep

*Drainage class:* Well drained

*Landform:* Uplands

*Landscape position:* Shoulders and back slopes

*Parent material:* Residuum derived from sericite schist and other fine-grained rock

*Shape of areas:* Irregular

*Size of areas:* 5 to 50 acres

### **Typical Profile**

0 to 2 inches—yellowish brown silt loam

2 to 8 inches—brownish yellow loam

8 to 28 inches—red silty clay

28 to 41 inches—red silty clay loam that has yellowish red lithochromic masses

41 to 65 inches—slightly weathered soft sericite schist bedrock that crushes to reddish brown silt loam

### **Minor Components**

*Dissimilar:*

- The very deep Wintergreen soils that formed in colluvial material and are in landscape positions similar to those of the Littlejoe soil
- The very deep Delanco soils that formed in alluvium and are on foot slopes in drainageways
- The excessively drained, shallow Bugley soils on the edges of delineations

*Similar:*

- Buffstat soils that have a reddish yellow subsoil and are in landscape positions similar to those of the Littlejoe soil
- Eroded areas that have a surface layer of clay loam
- Soils that are underlain by phyllite bedrock

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

## **32B—Minnieville loam, 2 to 7 percent slopes**

### **Composition**

Minnieville soil and similar components: 85 to 90 percent

Dissimilar components: 10 to 15 percent

### **Setting**

*Depth class:* Very deep

*Drainage class:* Well drained

*Landform:* Uplands

*Landscape position:* Summits, shoulders, and back slopes

*Parent material:* Residuum derived from greenstone, gabbro, and hornblende gneiss

*Shape of areas:* Irregular

*Size of areas:* 5 to 50 acres

**Typical Profile**

0 to 12 inches—brown loam  
 12 to 49 inches—red clay  
 49 to 72 inches—red clay saprolite

**Minor Components***Dissimilar:*

- The somewhat poorly drained Jackland soils in landscape positions similar to those of the Minnieville soil
- Delanco soils that formed in alluvium and are on foot slopes in drainageways
- The somewhat excessively drained Spriggs soils that have less clay in the subsoil than the Minnieville soil and are on the edges of delineations

*Similar:*

- Eroded areas that have a surface layer of clay loam

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

**32C—Minnieville loam, 7 to 15 percent slopes****Composition**

Minnieville soil and similar components: 85 to 90 percent  
 Dissimilar components: 10 to 15 percent

**Setting***Depth class:* Very deep*Drainage class:* Well drained*Landform:* Uplands*Landscape position:* Shoulders and back slopes*Parent material:* Residuum derived from greenstone, gabbro, and hornblende gneiss*Shape of areas:* Irregular*Size of areas:* 5 to 50 acres**Typical Profile**

0 to 12 inches—brown loam  
 12 to 49 inches—red clay  
 49 to 72 inches—red clay saprolite

**Minor Components***Dissimilar:*

- The somewhat poorly drained Jackland soils in landscape positions similar to those of the Minnieville soil

- Delanco soils that formed in alluvium and are on foot slopes in drainageways
- The somewhat excessively drained Spriggs soils that have less clay in the subsoil than the Minnieville soil and are on the edges of delineations

*Similar:*

- Eroded areas that have a surface layer of clay loam

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

**32D—Minnieville loam, 15 to 25 percent slopes****Composition**

Minnieville soil and similar components: 85 to 90 percent  
 Dissimilar components: 10 to 15 percent

**Setting***Depth class:* Very deep*Drainage class:* Well drained*Landform:* Uplands*Landscape position:* Back slopes*Parent material:* Residuum derived from greenstone, gabbro, and hornblende gneiss*Shape of areas:* Irregular*Size of areas:* 5 to 50 acres**Typical Profile**

0 to 12 inches—brown loam  
 12 to 49 inches—red clay  
 49 to 72 inches—red clay saprolite

**Minor Components***Dissimilar:*

- The somewhat excessively drained Spriggs soils that have less clay in the subsoil than the Minnieville soil and are on the edges of delineations
- The deep Fauquier soils in landscape positions similar to those of the Minnieville soil

*Similar:*

- Eroded areas that have a surface layer of clay loam

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

### 32E—Minnieville loam, 25 to 50 percent slopes

#### **Composition**

Minnieville soil and similar components: 85 to 90 percent

Dissimilar components: 10 to 15 percent

#### **Setting**

*Depth class:* Very deep

*Drainage class:* Well drained

*Landform:* Uplands

*Landscape position:* Back slopes

*Parent material:* Residuum derived from greenstone, gabbro, and hornblende gneiss

*Shape of areas:* Irregular

*Size of areas:* 5 to 50 acres

#### **Typical Profile**

0 to 12 inches—brown loam

12 to 49 inches—red clay

49 to 72 inches—red clay saprolite

#### **Minor Components**

*Dissimilar:*

- The somewhat excessively drained Spriggs soils that have less clay in the subsoil than the Minnieville soil and are on the edges of delineations
- The deep Fauquier soils in landscape positions similar to those of the Minnieville soil

*Similar:*

- Eroded areas that have a surface layer of clay loam

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

### 33C—Myersville-Catoctin complex, 7 to 15 percent slopes, extremely stony

#### **Composition**

Myersville soil and similar components: 55 to 60 percent

Catoctin soil and similar components: 30 to 35 percent

Dissimilar components: 5 to 15 percent

#### **Setting**

*Depth class:* Myersville—deep; Catoctin—moderately deep

*Drainage class:* Well drained

*Landform:* Mountain ridges

*Landscape position:* Summits, shoulders, and back slopes

*Parent material:* Residuum derived from greenstone

*Shape of areas:* Irregular to linear

*Size of areas:* 5 to 100 acres

*Surface cover:* 3 to 15 percent stones

#### **Typical Profile**

#### **Myersville**

0 to 11 inches—dark brown channery silt loam

11 to 40 inches—yellowish brown channery clay loam

40 to 47 inches—very pale brown very channery silt loam saprolite that has yellowish brown and black lithochromic masses

47 to 62 inches—slightly weathered soft greenstone bedrock that crushes to yellow silt loam

#### **Catoctin**

0 to 5 inches—dark brown channery silt loam

5 to 28 inches—strong brown channery silt loam that has lenses of yellowish brown channery silty clay loam

28 to 36 inches—yellowish brown extremely channery silt loam saprolite

36 inches—hard greenstone bedrock

#### **Minor Components**

*Dissimilar:*

- Fauquier soils that have a subsoil of red clay and are in landscape positions similar to those of the Myersville and Catoctin soils
- The very deep Lew soils on colluvial benches and in drainageways
- Areas that do not have a stony surface layer

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

### 33D—Myersville-Catoctin complex, 15 to 35 percent slopes, extremely stony

#### **Composition**

Myersville soil and similar components: 55 to 60 percent

Catoctin soil and similar components: 30 to 35 percent

Dissimilar components: 5 to 15 percent

**Setting**

*Depth class:* Myersville—deep; Catoctin—moderately deep

*Drainage class:* Well drained

*Landform:* Mountain ridges

*Landscape position:* Back slopes

*Parent material:* Residuum derived from greenstone

*Shape of areas:* Irregular to linear

*Size of areas:* 5 to 100 acres

*Surface cover:* 3 to 15 percent stones

**Typical Profile****Myersville**

0 to 11 inches—dark brown channery silt loam

11 to 40 inches—yellowish brown channery clay loam

40 to 47 inches—very pale brown very channery silt loam saprolite that has yellowish brown and black lithochromic masses

47 to 62 inches—slightly weathered soft greenstone bedrock that crushes to yellow silt loam

**Catoctin**

0 to 5 inches—dark brown channery silt loam

5 to 28 inches—strong brown channery silt loam that has lenses of yellowish brown channery silty clay loam

28 to 36 inches—yellowish brown extremely channery silt loam saprolite

36 inches—hard greenstone bedrock

**Minor Components***Dissimilar:*

- Fauquier soils that have a subsoil of red clay and are in landscape positions similar to those of the Myersville and Catoctin soils
- The very deep Lew soils on colluvial benches and in drainageways
- Areas that do not have a stony surface layer

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

**33E—Myersville-Catoctin complex, 35 to 55 percent slopes, extremely stony****Composition**

Myersville soil and similar components: 55 to 60 percent

Catoctin soil and similar components: 30 to 35 percent

Dissimilar components: 5 to 15 percent

**Setting**

*Depth class:* Myersville—deep; Catoctin—moderately deep

*Drainage class:* Well drained

*Landform:* Mountain ridges

*Landscape position:* Back slopes

*Parent material:* Residuum derived from greenstone

*Shape of areas:* Irregular to linear

*Size of areas:* 5 to 100 acres

*Surface cover:* 3 to 15 percent stones

**Typical Profile****Myersville**

0 to 11 inches—dark brown channery silt loam

11 to 40 inches—yellowish brown channery clay loam

40 to 47 inches—very pale brown very channery silt loam saprolite that has yellowish brown and black lithochromic masses

47 to 62 inches—slightly weathered soft greenstone bedrock that crushes to yellow silt loam

**Catoctin**

0 to 5 inches—dark brown channery silt loam

5 to 28 inches—strong brown channery silt loam that has lenses of yellowish brown channery silty clay loam

28 to 36 inches—yellowish brown extremely channery silt loam saprolite

36 inches—hard greenstone bedrock

**Minor Components***Dissimilar:*

- Fauquier soils that have a subsoil of red clay and are in landscape positions similar to those of the Myersville and Catoctin soils
- The very deep Lew soils on colluvial benches and in drainageways
- Areas that do not have a stony surface layer

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

**34C—Occoquan loam, 7 to 15 percent slopes****Composition**

Occoquan soil and similar components: 85 to 90 percent

Dissimilar components: 10 to 15 percent

**Setting**

*Depth class:* Deep  
*Drainage class:* Well drained or somewhat excessively drained  
*Landform:* Uplands  
*Landscape position:* Nose slopes and back slopes  
*Parent material:* Residuum derived from granite, gneiss, and granodiorite  
*Shape of areas:* Irregular  
*Size of areas:* 5 to 25 acres

**Typical Profile**

0 to 4 inches—dark brown loam  
 4 to 13 inches—yellowish red sandy clay loam  
 13 to 41 inches—yellowish red sandy loam saprolite  
 41 to 60 inches—slightly weathered soft gneiss  
 bedrock that crushes to strong brown sandy loam

**Minor Components***Dissimilar:*

- The very deep Hayesville soils that have a subsoil of red clay and are in landscape positions similar to those of the Occoquan soil
- The very deep Wintergreen soils that formed in colluvial material and are in landscape positions similar to those of the Occoquan soil
- Areas that have stones on the surface

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

**34D—Occoquan loam, 15 to 25 percent slopes****Composition**

Occoquan soil and similar components: 85 to 90 percent  
 Dissimilar components: 10 to 15 percent

**Setting**

*Depth class:* Deep  
*Drainage class:* Well drained or somewhat excessively drained  
*Landform:* Uplands  
*Landscape position:* Back slopes  
*Parent material:* Residuum derived from granite, gneiss, and granodiorite  
*Shape of areas:* Irregular  
*Size of areas:* 5 to 100 acres

**Typical Profile**

0 to 4 inches—dark brown loam  
 4 to 13 inches—yellowish red sandy clay loam  
 13 to 41 inches—yellowish red sandy loam saprolite  
 41 to 60 inches—slightly weathered soft gneiss  
 bedrock that crushes to strong brown sandy loam

**Minor Components***Dissimilar:*

- The very deep Hayesville soils that have a subsoil of red clay and are in landscape positions similar to those of the Occoquan soil
- The very deep Wintergreen soils that formed in colluvial material and are in landscape positions similar to those of the Occoquan soil
- Areas that have stones on the surface

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

**34E—Occoquan loam, 25 to 50 percent slopes****Composition**

Occoquan soil and similar components: 85 to 90 percent  
 Dissimilar components: 10 to 15 percent

**Setting**

*Depth class:* Deep  
*Drainage class:* Well drained or somewhat excessively drained  
*Landform:* Uplands  
*Landscape position:* Back slopes  
*Parent material:* Residuum derived from granite, gneiss, and granodiorite  
*Shape of areas:* Irregular  
*Size of areas:* 5 to 200 acres

**Typical Profile**

0 to 4 inches—dark brown loam  
 4 to 13 inches—yellowish red sandy clay loam  
 13 to 41 inches—yellowish red sandy loam saprolite  
 41 to 60 inches—slightly weathered soft gneiss  
 bedrock that crushes to strong brown sandy loam

**Minor Components***Dissimilar:*

- The very deep Hayesville soils that have a subsoil of

red clay and are in landscape positions similar to those of the Occoquan soil

- The very deep Wintergreen soils that formed in colluvial material and are in landscape positions similar to those of the Occoquan soil
- The somewhat excessively drained Peaks soils that have more rock fragments in the subsoil than the Occoquan soil and are in similar landscape positions
- Areas that have stones on the surface

*Similar:*

- Edneytown soils that have a subsoil that is thicker than that of the Occoquan soil and that are in similar landscape positions

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

### **35D—Occoquan loam, 15 to 25 percent slopes, very stony**

#### ***Composition***

Occoquan soil and similar components: 85 to 90 percent

Dissimilar components: 10 to 15 percent

#### ***Setting***

*Depth class:* Deep

*Drainage class:* Well drained or somewhat excessively drained

*Landform:* Uplands

*Landscape position:* Back slopes

*Parent material:* Residuum derived from granite, gneiss, and granodiorite

*Shape of areas:* Irregular

*Size of areas:* 5 to 200 acres

*Surface cover:* 0.1 to 3 percent stones

#### ***Typical Profile***

0 to 4 inches—dark brown loam

4 to 13 inches—yellowish red sandy clay loam

13 to 41 inches—yellowish red sandy loam saprolite

41 to 60 inches—slightly weathered soft gneiss

bedrock that crushes to strong brown sandy loam

#### ***Minor Components***

*Dissimilar:*

- The very deep Hayesville soils that have a subsoil of red clay and are in landscape positions similar to those of the Occoquan soil

- The very deep Wintergreen soils that formed in colluvial material and are in landscape positions similar to those of the Occoquan soil
- The somewhat excessively drained Peaks soils that have more rock fragments in the subsoil than the Occoquan soil and are in similar landscape positions
- Areas that have stones on the surface

*Similar:*

- Edneytown soils that have a subsoil that is thicker than that of the Occoquan soil and that are in similar landscape positions

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

### **35E—Occoquan loam, 25 to 50 percent slopes, very stony**

#### ***Composition***

Occoquan soil and similar components: 85 to 90 percent

Dissimilar components: 10 to 15 percent

#### ***Setting***

*Depth class:* Deep

*Drainage class:* Well drained or somewhat excessively drained

*Landform:* Uplands

*Landscape position:* Back slopes

*Parent material:* Residuum derived from granite, gneiss, and granodiorite

*Shape of areas:* Irregular

*Size of areas:* 5 to 200 acres

*Surface cover:* 0.1 to 3 percent stones

#### ***Typical Profile***

0 to 4 inches—dark brown loam

4 to 13 inches—yellowish red sandy clay loam

13 to 41 inches—yellowish red sandy loam saprolite

41 to 60 inches—slightly weathered soft gneiss

bedrock that crushes to strong brown sandy loam

#### ***Minor Components***

*Dissimilar:*

- The very deep Hayesville soils that have a subsoil of red clay and are in landscape positions similar to those of the Occoquan soil
- The very deep Wintergreen soils that formed in colluvial material and are in landscape positions similar to those of the Occoquan soil

- The somewhat excessively drained Peaks soils that have more rock fragments in the subsoil than the Occoquan soil and that are in similar landscape positions
- Areas that have stones on the surface

*Similar:*

- Edneytown soils that have a subsoil that is thicker than that of the Occoquan soil and that are in similar landscape positions

Additional information specific to the soils in this map unit is available in the section "Soil Properties." For general and detailed information about managing the map unit, refer to the section "Use and Management of the Soils."

### **36D—Peaks-Rock outcrop complex, 15 to 35 percent slopes**

#### ***Composition***

Peaks soil and similar components: 55 to 60 percent  
Rock outcrop: 30 to 35 percent  
Dissimilar components: 5 to 15 percent

#### ***Setting***

*Depth class:* Peaks—moderately deep; Rock outcrop—not applicable  
*Drainage class:* Peaks—somewhat excessively drained; Rock outcrop—not applicable  
*Landform:* Mountain ridges  
*Landscape position:* Summits, shoulders, and back slopes  
*Parent material:* Residuum derived from gneiss, granite, and granodiorite  
*Shape of areas:* Irregular  
*Size of areas:* 5 to 500 acres

#### ***Typical Profile***

##### **Peaks**

0 to 2 inches—very dark grayish brown very gravelly loam  
2 to 7 inches—dark yellowish brown very gravelly loam  
7 to 25 inches—strong brown very gravelly loam  
25 to 36 inches—slightly weathered granodiorite that crushes to yellowish brown extremely channery loam  
36 inches—hard granodiorite bedrock

##### **Rock outcrop**

Areas of Rock outcrop consist of exposures of gneiss, granite, and granodiorite bedrock. The

outcrops are as much as 50 feet in height and are spaced 10 to 200 feet apart.

#### ***Minor Components***

*Dissimilar:*

- The well drained Edneytown soils that have fewer rock fragments in the subsoil than the Peaks soil and that are in similar landscape positions
- Areas that have Rock outcrop spaced more than 200 feet apart

Additional information specific to the soils in this map unit is available in the section "Soil Properties." For general and detailed information about managing the map unit, refer to the section "Use and Management of the Soils."

### **36E—Peaks-Rock outcrop complex, 35 to 55 percent slopes**

#### ***Composition***

Peaks soil and similar components: 55 to 60 percent  
Rock outcrop: 30 to 35 percent  
Dissimilar components: 5 to 15 percent

#### ***Setting***

*Depth class:* Peaks—moderately deep; Rock outcrop—not applicable  
*Drainage class:* Peaks—somewhat excessively drained; Rock outcrop—not applicable  
*Landform:* Mountain ridges  
*Landscape position:* Back slopes  
*Parent material:* Residuum derived from gneiss, granite, and granodiorite  
*Shape of areas:* Irregular  
*Size of areas:* 5 to 500 acres

#### ***Typical Profile***

##### **Peaks**

0 to 2 inches—very dark grayish brown very gravelly loam  
2 to 7 inches—dark yellowish brown very gravelly loam  
7 to 25 inches—strong brown very gravelly loam  
25 to 36 inches—slightly weathered granodiorite that crushes to yellowish brown extremely channery loam  
36 inches—hard granodiorite bedrock

##### **Rock outcrop**

Areas of Rock outcrop consist of exposures of gneiss, granite, and granodiorite bedrock. The

outcrops are as much as 50 feet in height and are spaced 10 to 200 feet apart.

### ***Minor Components***

#### *Dissimilar:*

- The well drained Edneytown soils that have fewer rock fragments in the subsoil than the Peaks soil and that are in similar landscape positions
- Areas that have Rock outcrop spaced more than 200 feet apart

Additional information specific to the soils in this map unit is available in the section "Soil Properties." For general and detailed information about managing the map unit, refer to the section "Use and Management of the Soils."

## **36F—Peaks-Rock outcrop complex, 55 to 75 percent slopes**

### ***Composition***

Peaks soil and similar components: 55 to 60 percent  
Rock outcrop: 30 to 35 percent  
Dissimilar components: 5 to 15 percent

### ***Setting***

*Depth class:* Peaks—moderately deep; Rock outcrop—not applicable  
*Drainage class:* Peaks—somewhat excessively drained; Rock outcrop—not applicable  
*Landform:* Mountain ridges  
*Landscape position:* Back slopes  
*Parent material:* Residuum derived from gneiss, granite, and granodiorite  
*Shape of areas:* Irregular  
*Size of areas:* 5 to 500 acres; most areas are in the George Washington National Forest

### ***Typical Profile***

#### **Peaks**

0 to 2 inches—very dark grayish brown very gravelly loam  
2 to 7 inches—dark yellowish brown very gravelly loam  
7 to 25 inches—strong brown very gravelly loam  
25 to 36 inches—slightly weathered granodiorite that crushes to yellowish brown extremely channery loam  
36 inches—hard granodiorite bedrock

#### **Rock outcrop**

Areas of Rock outcrop consist of exposures of gneiss, granite, and granodiorite bedrock. The

outcrops are as much as 50 feet in height and are spaced 10 to 200 feet apart.

### ***Minor Components***

#### *Dissimilar:*

- The well drained Edneytown soils that have fewer rock fragments in the subsoil than the Peaks soil and that are in similar landscape positions
- Areas that have Rock outcrop spaced more than 200 feet apart

Additional information specific to the soils in this map unit is available in the section "Soil Properties." For general and detailed information about managing the map unit, refer to the section "Use and Management of the Soils."

## **37A—Pineywoods silt loam, 0 to 2 percent slopes**

### ***Composition***

Pineywoods soil and similar components: 85 to 95 percent  
Dissimilar components: 5 to 15 percent

### ***Setting***

*Depth class:* Deep  
*Drainage class:* Poorly drained  
*Landform:* Uplands  
*Landscape position:* Summits and shoulders  
*Parent material:* Residuum derived from anorthosite  
*Shape of areas:* Irregular  
*Size of areas:* 5 to 150 acres

### ***Typical Profile***

0 to 1 inch—dark gray silt loam  
1 to 6 inches—light brownish gray silt loam that has brownish yellow iron masses  
6 to 22 inches—light brownish gray silty clay and clay having brownish yellow and pale brown iron masses  
22 to 41 inches—white loam saprolite that has light gray and reddish yellow iron masses  
41 inches—light gray, slightly weathered anorthosite that crushes to clay loam

### ***Minor Components***

#### *Dissimilar:*

- The well drained, very deep Colleen soils in the more rolling, convex landscapes positions
- The moderately well drained, very deep Sketerville soils in landscape positions similar to those of the Pineywoods soil

*Similar:*

- Areas that have a gravelly surface layer

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

**38—Pits, quarry*****Setting***

*Depth class:* Very deep

*Landform:* Uplands

*Landscape position:* Summits, shoulders, and back slopes

*Shape of areas:* Variable

*Size of areas:* 5 to 100 acres

***Typical Profile***

Areas of this map unit primarily consist of open excavations from which soil and underlying rock have been removed, exposing bedrock. These pits are associated with mining or quarry activities. They may be filled with water. A typical profile is not given due to the variability of the soil material.

**39C—Saunook loam, 7 to 15 percent slopes*****Composition***

Saunook soil and similar components: 85 to 90 percent

Dissimilar components: 10 to 15 percent

***Setting***

*Depth class:* Very deep

*Drainage class:* Well drained

*Landform:* Uplands, benches, and fans

*Landscape position:* Shoulders, back slopes, and foot slopes

*Parent material:* Colluvium

*Shape of areas:* Irregular to linear

*Size of areas:* 5 to 50 acres

***Typical Profile***

0 to 9 inches—very dark grayish brown loam

9 to 29 inches—brown clay loam

29 to 52 inches—strong brown clay loam

52 to 61 inches—yellowish brown very cobbly sandy loam

***Minor Components****Dissimilar:*

- The deep Edneytown soils that formed in residual material and are in landscape positions similar to those of the Saunook soil
- The moderately deep Peaks soils that formed in residual material and are in landscape positions similar to those of the Saunook soil
- The well drained and somewhat excessively drained, deep Occoquan soils that formed in residual material and are in landscape positions similar to those of the Saunook soil
- The somewhat poorly drained Belvoir soils on foot slopes
- Areas that have a very stony surface layer

*Similar:*

- Thurmont soils that have less organic matter in the surface layer than the Saunook soil and that are in similar landscape positions

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

**39D—Saunook loam, 15 to 25 percent slopes*****Composition***

Saunook soil and similar components: 85 percent

Dissimilar components: 15 percent

***Setting***

*Depth class:* Very deep

*Drainage class:* Well drained

*Landform:* Uplands, benches, and fans

*Landscape position:* Back slopes and foot slopes

*Parent material:* Colluvium and alluvium

*Shape of areas:* Irregular to linear

*Size of areas:* 5 to 50 acres

***Typical Profile***

0 to 9 inches—very dark grayish brown loam

9 to 29 inches—brown clay loam

29 to 52 inches—strong brown clay loam

52 to 61 inches—yellowish brown very cobbly sandy loam

***Minor Components****Dissimilar:*

- The deep Edneytown soils that formed in residual

material and are in landscape positions similar to those of the Saunook soil

- The moderately deep Peaks soils that formed in residual material and are in landscape positions similar to those of the Saunook soil
- The well drained and somewhat excessively drained, deep Occoquan soils that formed in residual material and are in landscape positions similar to those of the Saunook soil
- The somewhat poorly drained Belvoir soils on foot slopes
- Areas that have a very stony surface layer

*Similar:*

- Thurmont soils that have less organic matter in the surface layer than the Saunook soil and are in similar landscape positions

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

#### **40C—Saunook loam, 7 to 15 percent slopes, very stony**

##### ***Composition***

Saunook soil and similar components: 85 to 90 percent

Dissimilar components: 10 to 15 percent

##### ***Setting***

*Depth class:* Very deep

*Drainage class:* Well drained

*Landform:* Uplands, benches, and fans

*Landscape position:* Shoulders, back slopes, foot slopes, and drainageways

*Parent material:* Colluvium

*Shape of areas:* Irregular to linear

*Size of areas:* 5 to 200 acres

*Surface cover:* 0.1 to 3 percent stones

##### ***Typical Profile***

0 to 9 inches—very dark grayish brown loam

9 to 29 inches—brown clay loam

29 to 52 inches—strong brown clay loam

52 to 61 inches—yellowish brown very cobbly sandy loam

##### ***Minor Components***

*Dissimilar:*

- The deep Edneytown soils that formed in residual

material and are in landscape positions similar to those of the Saunook soil

- The moderately deep Peaks soils that formed in residual material and are in landscape positions similar to those of the Saunook soil
- The well drained and somewhat excessively drained, deep Occoquan soils that formed in residual material and are in landscape positions similar to those of the Saunook soil
- The somewhat poorly drained Belvoir soils on foot slopes
- Areas that do not have a very stony surface layer

*Similar:*

- Thurmont soils that have less organic matter in the surface layer than the Saunook soil and that are in similar landscape positions

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

#### **40D—Saunook loam, 15 to 25 percent slopes, very stony**

##### ***Composition***

Saunook soil and similar components: 85 to 90 percent

Dissimilar components: 10 to 15 percent

##### ***Setting***

*Depth class:* Very deep

*Drainage class:* Well drained

*Landform:* Uplands, benches, and fans

*Landscape position:* Back slopes, foot slopes, and drainageways

*Parent material:* Colluvium

*Shape of areas:* Irregular to linear

*Size of areas:* 5 to 200 acres

*Surface cover:* 0.1 to 3 percent stones

##### ***Typical Profile***

0 to 9 inches—very dark grayish brown loam

9 to 29 inches—brown clay loam

29 to 52 inches—strong brown clay loam

52 to 61 inches—yellowish brown very cobbly sandy loam

##### ***Minor Components***

*Dissimilar:*

- The deep Edneytown soils that formed in residual

material and are in landscape positions similar to those of the Saunook soil

- The moderately deep Peaks soils that formed in residual material and are in landscape positions similar to those of the Saunook soil
- The well drained and somewhat excessively drained, deep Occoquan soils that formed in residual material and that are in landscape positions similar to those of the Saunook soil
- The somewhat poorly drained Belvoir soils on foot slopes
- Areas that do not have a very stony surface layer

*Similar:*

- Thurmont soils that have less organic matter in the surface layer than the Saunook soil and are in similar landscape positions

Additional information specific to the soils in this map unit is available in the section "Soil Properties." For general and detailed information about managing the map unit, refer to the section "Use and Management of the Soils."

#### **40E—Saunook loam, 25 to 50 percent slopes, very stony**

##### ***Composition***

Saunook soil and similar components: 85 to 90 percent

Dissimilar components: 10 to 15 percent

##### ***Setting***

*Depth class:* Very deep

*Drainage class:* Well drained

*Landform:* Uplands, benches, and fans

*Landscape position:* Back slopes and drainageways

*Parent material:* Colluvium

*Shape of areas:* Irregular to linear

*Size of areas:* 5 to 200 acres

*Surface cover:* 0.1 to 3 percent stones

##### ***Typical Profile***

0 to 9 inches—very dark grayish brown loam

9 to 29 inches—brown clay loam

29 to 52 inches—strong brown clay loam

52 to 61 inches—yellowish brown very cobbly sandy loam

##### ***Minor Components***

*Dissimilar:*

- The deep Edneytown soils that formed in residual material and are in landscape positions similar to those of the Saunook soil

- The moderately deep Peaks soils that formed in residual material and are in landscape positions similar to those of the Saunook soil
- The well drained and somewhat excessively drained, deep Occoquan soils that formed in residual material and are in landscape positions similar to those of the Saunook soil
- The somewhat poorly drained Belvoir soils on foot slopes
- Areas that do not have a very stony surface layer

*Similar:*

- Thurmont soils that have less organic matter in the surface layer than the Saunook soil and that are in similar landscape positions

Additional information specific to the soils in this map unit is available in the section "Soil Properties." For general and detailed information about managing the map unit, refer to the section "Use and Management of the Soils."

#### **41B—Sketerville silt loam, 2 to 7 percent slopes**

##### ***Composition***

Sketerville soil and similar components: 85 to 95 percent

Dissimilar components: 5 to 15 percent

##### ***Setting***

*Depth class:* Very deep

*Drainage class:* Moderately well drained

*Landform:* Uplands

*Landscape position:* Summits and shoulders

*Parent material:* Residuum derived from anorthosite

*Shape of areas:* Irregular

*Size of areas:* 5 to 50 acres

##### ***Typical Profile***

0 to 4 inches—dark grayish brown, pale brown, and yellow silt loam

4 to 12 inches—light yellowish brown clay that has very pale brown iron depletions and brownish yellow iron masses

12 to 42 inches—yellowish brown clay that has light brownish gray iron depletions and brownish yellow iron masses

42 to 52 inches—gray and light brownish gray clay that has brownish yellow iron masses

52 to 70 inches—white, light gray, and light brownish gray silty clay loam saprolite that has brownish yellow iron masses

70 inches—white hard anorthosite bedrock

### **Minor Components**

#### *Dissimilar:*

- The well drained Colleen soils in the more rolling, convex landscape positions
- The poorly drained, deep Pineywoods soils in landscape positions similar to those of the Sketerville soil

#### *Similar:*

- Areas that have a gravelly surface layer

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

### **42C—Spriggs loam, 7 to 15 percent slopes, very stony**

#### **Composition**

Spriggs soil and similar components: 85 to 90 percent  
Dissimilar components: 10 to 15 percent

#### **Setting**

*Depth class:* Moderately deep

*Drainage class:* Well drained

*Landform:* Uplands

*Landscape position:* Summits, shoulders, and back slopes

*Parent material:* Residuum derived from gabbro, diorite, and greenstone

*Shape of areas:* Irregular

*Size of areas:* 5 to 200 acres

*Surface cover:* 0.1 to 3 percent stones

#### **Typical Profile**

0 to 4 inches—brown loam

4 to 14 inches—yellowish brown gravelly loam

14 to 20 inches—yellowish brown gravelly loam  
saprolite

20 to 41 inches—slightly weathered soft gabbro  
bedrock that crushes to yellowish brown gravelly  
sandy loam

41 inches—hard gabbro bedrock

### **Minor Components**

#### *Dissimilar:*

- The very deep Minnieville soils that have a subsoil of red clay and that are in landscape positions similar to those of the Spriggs soil
- The deep Fauquier soils that have a subsoil of red

clay and that are in landscape positions similar to those of the Spriggs soil

- The somewhat poorly drained Jackland soils in landscape positions similar to those of the Spriggs soil
- Areas that do not have stones on the surface

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

### **42D—Spriggs loam, 15 to 25 percent slopes, very stony**

#### **Composition**

Spriggs soil and similar components: 85 to 90 percent  
Dissimilar components: 10 to 15 percent

#### **Setting**

*Depth class:* Moderately deep

*Drainage class:* Well drained

*Landform:* Uplands

*Landscape position:* Back slopes

*Parent material:* Residuum derived from gabbro, diorite, and greenstone

*Shape of areas:* Irregular

*Size of areas:* 5 to 200 acres

*Surface cover:* 0.1 to 3 percent stones

#### **Typical Profile**

0 to 4 inches—brown loam

4 to 14 inches—yellowish brown gravelly loam

14 to 20 inches—yellowish brown gravelly loam  
saprolite

20 to 41 inches—slightly weathered soft gabbro  
bedrock that crushes to yellowish brown gravelly  
sandy loam

41 inches—hard gabbro bedrock

### **Minor Components**

#### *Dissimilar:*

- The very deep Minnieville soils that have a subsoil of red clay and that are in landscape positions similar to those of the Spriggs soil
- The deep Fauquier soils that have a subsoil of red clay and that are in landscape positions similar to those of the Spriggs soil
- The somewhat poorly drained Jackland soils in landscape positions similar to those of the Spriggs soil
- Areas that do not have stones on the surface

Additional information specific to the soils in this

map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

### **42E—Spriggs loam, 25 to 50 percent slopes, very stony**

#### ***Composition***

Spriggs soil and similar components: 85 to 90 percent  
Dissimilar components: 10 to 15 percent

#### ***Setting***

*Depth class:* Moderately deep  
*Drainage class:* Well drained  
*Landform:* Uplands  
*Landscape position:* Back slopes  
*Parent material:* Residuum derived from gabbro, diorite, and greenstone  
*Shape of areas:* Irregular  
*Size of areas:* 5 to 200 acres  
*Surface cover:* 0.1 to 3 percent stones

#### ***Typical Profile***

0 to 4 inches—brown loam  
4 to 14 inches—yellowish brown gravelly loam  
14 to 20 inches—yellowish brown gravelly loam saprolite  
20 to 41 inches—slightly weathered soft gabbro bedrock that crushes to yellowish brown gravelly sandy loam  
41 inches—hard gabbro bedrock

#### ***Minor Components***

##### *Dissimilar:*

- The very deep Minnieville soils that have a subsoil of red clay and that are in landscape positions similar to those of the Spriggs soil
- The deep Fauquier soils that have a subsoil of red clay and that are in landscape positions similar to those of the Spriggs soil
- The somewhat poorly drained Jackland soils in landscape positions similar to those of the Spriggs soil
- Areas that do not have stones on the surface

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

### **43A—Suches loam, 0 to 2 percent slopes, frequently flooded**

#### ***Composition***

Suches soil and similar components: 85 to 90 percent  
Dissimilar components: 10 to 15 percent

#### ***Setting***

*Depth class:* Very deep  
*Drainage class:* Moderately well drained  
*Landform:* Flood plains  
*Landscape position:* Depressions and areas at the base of adjacent terraces and uplands  
*Parent material:* Recent alluvium  
*Shape of areas:* Irregular  
*Size of areas:* 5 to 50 acres

#### ***Typical Profile***

0 to 11 inches—brown loam  
11 to 23 inches—strong brown loam  
23 to 30 inches—dark brown clay loam  
30 to 43 inches—yellowish brown sandy clay loam  
43 to 61 inches—variegated yellowish brown and light brownish gray sandy loam

#### ***Minor Components***

##### *Dissimilar:*

- The well drained Colvard soils that have less clay in the subsoil than the Suches soil and that are in the higher flood plain areas, nearest to the streams
- The well drained Craigsville soils that have more rock fragments in the subsoil than the Suches soil and that are in the higher flood plain areas, nearest to the streams
- The somewhat poorly drained Codorus soils in landscape positions similar to those of the Suches soil
- The poorly drained Hatboro soils in landscape positions similar to those of the Suches soil

##### *Similar:*

- Areas that have a surface layer that is darker than that of the Suches soil

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils” (fig. 6).

### **44C—Sylco-Sylvatus complex, 7 to 15 percent slopes, extremely stony**

#### ***Composition***

Sylco soil and similar components: 50 to 55 percent



Figure 6.—Corn on Suches loam, 0 to 2 percent slopes, frequently flooded.

Sylvatus soil and similar components: 35 to 40 percent  
Dissimilar components: 5 to 15 percent

### ***Setting***

*Depth class:* Sylco—moderately deep; Sylvatus—shallow

*Drainage class:* Well drained

*Landform:* Mountain ridges

*Landscape position:* Summits, shoulders, and back slopes

*Parent material:* Residuum derived from phyllite, siltstone, and slate

*Shape of areas:* Irregular

*Size of areas:* 5 to 100 acres

*Surface cover:* 3 to 15 percent stones

### ***Typical Profile***

#### **Sylco**

0 to 3 inches—dark yellowish brown channery silt loam

3 to 25 inches—yellowish brown very channery silty clay loam that has strong brown and pale yellow lithochromic masses

25 to 34 inches—yellowish brown very channery clay loam that has strong brown and pale yellow lithochromic masses

34 to 38 inches—slightly weathered soft phyllite bedrock that crushes to yellowish brown extremely channery loam

38 inches—hard phyllite bedrock

#### **Sylvatus**

0 to 1 inch—yellowish brown very channery silt loam

1 to 9 inches—yellowish brown very channery silty clay loam

9 to 15 inches—yellowish brown extremely channery clay loam

15 to 19 inches—slightly weathered soft phyllite bedrock that crushes to yellowish brown extremely channery silt loam

19 inches—hard, fractured phyllite bedrock

### ***Minor Components***

#### ***Dissimilar:***

- The deep Edneytown soils that formed in granite gneiss and granodiorite and are in landscape positions similar to those of the Sylco and Sylvatus soils
- Peaks soils that have rock fragments derived from granite gneiss and granodiorite and that are in landscape positions similar to those of the Sylco and Sylvatus soils
- Areas that do not have a stony surface layer

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

#### **44D—Sylco-Sylvatus complex, 15 to 35 percent slopes, extremely stony**

##### ***Composition***

Sylco soil and similar components: 50 to 55 percent  
Sylvatus soil and similar components: 35 to 40 percent  
Dissimilar components: 5 to 15 percent

##### ***Setting***

*Depth class:* Sylco—moderately deep; Sylvatus—shallow

*Drainage class:* Well drained

*Landform:* Mountain ridges

*Landscape position:* Back slopes

*Parent material:* Residuum derived from phyllite, siltstone, and slate

*Shape of areas:* Irregular

*Size of areas:* 5 to 200 acres

*Surface cover:* 3 to 15 percent stones

##### ***Typical Profile***

##### **Sylco**

0 to 3 inches—dark yellowish brown channery silt loam

3 to 25 inches—yellowish brown very channery silty clay loam that has strong brown and pale yellow lithochromic masses

25 to 34 inches—yellowish brown very channery clay loam that has strong brown and pale yellow lithochromic masses

34 to 38 inches—slightly weathered soft phyllite bedrock that crushes to yellowish brown extremely channery loam

38 inches—hard phyllite bedrock

##### **Sylvatus**

0 to 1 inch—yellowish brown very channery silt loam

1 to 9 inches—yellowish brown very channery silty clay loam

9 to 15 inches—yellowish brown extremely channery clay loam

15 to 19 inches—slightly weathered soft phyllite bedrock that crushes to yellowish brown extremely channery silt loam

19 inches—hard, fractured phyllite bedrock

#### ***Minor Components***

##### ***Dissimilar:***

- The deep Edneytown soils that formed in granite gneiss and granodiorite and that are in landscape positions similar to those of the Sylco and Sylvatus soils
- Peaks soils that have rock fragments derived from granite gneiss and granodiorite and that are in landscape positions similar to those of the Sylco and Sylvatus soils
- Areas that do not have a stony surface layer

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

#### **44E—Sylco-Sylvatus complex, 35 to 55 percent slopes, extremely stony**

##### ***Composition***

Sylco soil and similar components: 50 to 55 percent  
Sylvatus soil and similar components: 35 to 40 percent  
Dissimilar components: 5 to 15 percent

##### ***Setting***

*Depth class:* Sylco—moderately deep; Sylvatus—shallow

*Drainage class:* Well drained

*Landform:* Mountain ridges

*Landscape position:* Back slopes

*Parent material:* Residuum derived from phyllite, siltstone, and slate

*Shape of areas:* Irregular

*Size of areas:* 5 to 200 acres

*Surface cover:* 3 to 15 percent stones

##### ***Typical Profile***

##### **Sylco**

0 to 3 inches—dark yellowish brown channery silt loam

3 to 25 inches—yellowish brown very channery silty clay loam that has strong brown and pale yellow lithochromic masses

25 to 34 inches—yellowish brown very channery clay loam that has strong brown and pale yellow lithochromic masses

34 to 38 inches—slightly weathered soft phyllite bedrock that crushes to yellowish brown extremely channery loam

38 inches—hard phyllite bedrock

**Sylvatus**

0 to 1 inch—yellowish brown very channery silt loam  
 1 to 9 inches—yellowish brown very channery silty clay loam  
 9 to 15 inches—yellowish brown extremely channery clay loam  
 15 to 19 inches—slightly weathered soft phyllite bedrock that crushes to yellowish brown extremely channery silt loam  
 19 inches—hard, fractured phyllite bedrock

**Minor Components***Dissimilar:*

- The deep Edneytown soils that formed in granite gneiss and granodiorite and that are in landscape positions similar to those of the Sylco and Sylvatus soils
- Peaks soils that have rock fragments derived from granite gneiss and granodiorite and that are in landscape positions similar to those of the Sylco and Sylvatus soils
- Areas that do not have a stony surface layer

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

**45E—Sylvatus-Rock outcrop complex, 35 to 55 percent slopes, extremely stony****Composition**

Sylvatus soil and similar components: 55 to 60 percent  
 Rock outcrop: 30 to 35 percent  
 Dissimilar components: 5 to 15 percent

**Setting**

*Depth class:* Sylvatus—shallow; Rock outcrop—not applicable

*Drainage class:* Sylvatus—well drained; Rock outcrop—not applicable

*Landform:* Mountain ridges

*Landscape position:* Summits, shoulders, and back slopes

*Parent material:* Residuum derived from phyllite, siltstone, and slate

*Shape of areas:* Irregular

*Size of areas:* 5 to 250 acres

*Surface cover:* 3 to 15 percent stones

**Typical Profile****Sylvatus**

0 to 1 inch—yellowish brown very channery silt loam  
 1 to 9 inches—yellowish brown very channery silty clay loam  
 9 to 15 inches—yellowish brown extremely channery clay loam  
 15 to 19 inches—slightly weathered soft phyllite bedrock that crushes to yellowish brown extremely channery silt loam  
 19 inches—hard, fractured phyllite bedrock

**Rock outcrop**

Areas of Rock outcrop consist of exposures of granodiorite, granite, and gneiss bedrock interbedded with phyllite, siltstone, and slate. The outcrops are as much as 50 feet in height and are spaced 10 to 200 feet apart.

**Minor Components***Dissimilar:*

- The moderately deep Sylco soils in landscape positions similar to those of the Sylvatus soil
- The deep Edneytown soils that formed in granite gneiss and granodiorite and that are in landscape positions similar to those of the Sylvatus soil
- Peaks soils that have rock fragments derived from granite gneiss and granodiorite and that are in landscape positions similar to those of the Sylvatus soil
- Areas that do not have a stony surface layer
- Areas that have Rock outcrop spaced more than 200 feet apart

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

**45F—Sylvatus-Rock outcrop complex, 55 to 70 percent slopes, extremely stony****Composition**

Sylvatus soil and similar components: 55 to 60 percent  
 Rock outcrop: 30 to 35 percent  
 Dissimilar components: 5 to 15 percent

**Setting**

*Depth class:* Sylvatus—shallow; Rock outcrop—not applicable

*Drainage class:* Sylvatus—well drained; Rock outcrop—not applicable

*Landform:* Mountain ridges

*Landscape position:* Back slopes

*Parent material:* Residuum derived from phyllite, siltstone, and slate

*Shape of areas:* Irregular

*Size of areas:* 5 to 250 acres; most areas are in the George Washington National Forest

*Surface cover:* 3 to 15 percent stones

### **Typical Profile**

#### **Sylvatus**

0 to 1 inch—yellowish brown very channery silt loam

1 to 9 inches—yellowish brown very channery silty clay loam

9 to 15 inches—yellowish brown extremely channery clay loam

15 to 19 inches—slightly weathered soft phyllite bedrock that crushes to yellowish brown extremely channery silt loam

19 inches—hard, fractured phyllite bedrock

#### **Rock outcrop**

Areas of Rock outcrop consist of exposures of granodiorite, granite, and gneiss bedrock interbedded with phyllite, siltstone, and slate. The outcrops are as much as 50 feet in height and are spaced 10 to 200 feet apart.

### **Minor Components**

#### *Dissimilar:*

- The moderately deep Sylco soils in landscape positions similar to those of the Sylvatus soil
- The deep Edneytown soils that formed in granite gneiss and granodiorite and that are in landscape positions similar to those of the Sylvatus soil
- Peaks soils that have rock fragments derived from granite gneiss and granodiorite and that are in landscape positions similar to those of the Sylvatus soil
- Areas that do not have a stony surface layer
- Areas that have Rock outcrop spaced more than 200 feet apart

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

## **46B—Thurmont loam, 2 to 7 percent slopes**

### **Composition**

Thurmont soil and similar components: 85 to 90 percent

Dissimilar components: 10 to 15 percent

### **Setting**

*Depth class:* Very deep

*Drainage class:* Well drained

*Landform:* Upland benches and fans

*Landscape position:* Shoulders and foot slopes

*Parent material:* Colluvium and local alluvium

*Shape of areas:* Irregular

*Size of areas:* 5 to 50 acres

### **Typical Profile**

0 to 5 inches—dark brown loam

5 to 31 inches—strong brown clay loam and sandy clay loam

31 to 40 inches—strong brown sandy loam

40 to 62 inches—yellowish brown, brown, and strong brown very cobbly loam

### **Minor Components**

#### *Dissimilar:*

- The deep Edneytown soils that formed in residual material and are in landscape positions similar to those of the Thurmont soil
- The moderately deep Peaks soils that formed in residual material and are in landscape positions similar to those of the Thurmont soil
- The well drained and somewhat excessively drained, deep Occoquan soils that formed in residual material and are in landscape positions similar to those of the Thurmont soil
- Craigsville soils that have more rock fragments in the subsoil than the Thurmont soil and that are on narrow flood plains
- The somewhat poorly drained Belvoir soils on foot slopes
- Areas that have a very stony surface layer

#### *Similar:*

- Saunook soils that have more organic matter in the surface layer than the Thurmont soil and that are in similar landscape positions

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing

the map unit, refer to the section “Use and Management of the Soils.”

### **46C—Thurmont loam, 7 to 15 percent slopes**

#### ***Composition***

Thurmont soil and similar components: 85 to 90 percent

Dissimilar components: 10 to 15 percent

#### ***Setting***

*Depth class:* Very deep

*Drainage class:* Well drained

*Landform:* Upland benches and fans

*Landscape position:* Shoulders, back slopes, and foot slopes

*Parent material:* Colluvium and local alluvium

*Shape of areas:* Irregular

*Size of areas:* 5 to 50 acres

#### ***Typical Profile***

0 to 5 inches—dark brown loam

5 to 31 inches—strong brown clay loam and sandy clay loam

31 to 40 inches—strong brown sandy loam

40 to 62 inches—yellowish brown, brown, and strong brown very cobbly loam

#### ***Minor Components***

##### *Dissimilar:*

- The deep Edneytown soils that formed in residual material and are in landscape positions similar to those of the Thurmont soil
- The moderately deep Peaks soils that formed in residual material and are in landscape positions similar to those of the Thurmont soil
- The well drained and somewhat excessively drained, deep Occoquan soils that formed in residual material and are in landscape positions similar to those of the Thurmont soil
- Craigsville soils that have more rock fragments in the subsoil than the Thurmont soil and that are on narrow flood plains
- The somewhat poorly drained Belvoir soils on foot slopes
- Areas that have a very stony surface layer

##### *Similar:*

- Saunook soils that have more organic matter in the surface layer than the Thurmont soil and are in similar landscape positions

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

### **46D—Thurmont loam, 15 to 25 percent slopes**

#### ***Composition***

Thurmont soil and similar components: 85 to 90 percent

Dissimilar components: 10 to 15 percent

#### ***Setting***

*Depth class:* Very deep

*Drainage class:* Well drained

*Landform:* Upland benches and fans

*Landscape position:* Back slopes

*Parent material:* Colluvium and local alluvium

*Shape of areas:* Irregular

*Size of areas:* 5 to 50 acres

#### ***Typical Profile***

0 to 5 inches—dark brown loam

5 to 31 inches—strong brown clay loam and sandy clay loam

31 to 40 inches—strong brown sandy loam

40 to 62 inches—yellowish brown, brown, and strong brown very cobbly loam

#### ***Minor Components***

##### *Dissimilar:*

- The deep Edneytown soils that formed in residual material and are in landscape positions similar to those of the Thurmont soil
- The moderately deep Peaks soils that formed in residual material and are in landscape positions similar to those of the Thurmont soil
- The well drained and somewhat excessively drained, deep Occoquan soils that formed in residual material and are in landscape positions similar to those of the Thurmont soil
- Craigsville soils that have more rock fragments in the subsoil than the Thurmont soil and are on narrow flood plains
- The somewhat poorly drained Belvoir soils on foot slopes
- Areas that have a very stony surface layer

##### *Similar:*

- Saunook soils that have more organic matter in the

surface layer than the Thurmont soil and are in similar landscape positions

Additional information specific to the soils in this map unit is in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

### **47B—Thurmont loam, 2 to 7 percent slopes, very stony**

#### ***Composition***

Thurmont soil and similar components: 85 to 90 percent

Dissimilar components: 10 to 15 percent

#### ***Setting***

*Depth class:* Very deep

*Drainage class:* Well drained

*Landform:* Upland benches and fans

*Landscape position:* Foot slopes

*Parent material:* Colluvium and local alluvium

*Shape of areas:* Irregular

*Size of areas:* 5 to 50 acres

*Surface cover:* 0.1 to 3 percent stones

#### ***Typical Profile***

0 to 5 inches—dark brown loam

5 to 31 inches—strong brown clay loam and sandy clay loam

31 to 40 inches—strong brown sandy loam

40 to 62 inches—yellowish brown, brown, and strong brown very cobbly loam

#### ***Minor Components***

*Dissimilar:*

- The deep Edneytown soils that formed in residual material and are in landscape positions similar to those of the Thurmont soil
- The moderately deep Peaks soils that formed in residual material and are in landscape positions similar to those of the Thurmont soil
- The well drained and somewhat excessively drained, deep Occoquan soils that formed in residual material and are in landscape positions similar to those of the Thurmont soil
- Craigsville soils that have more rock fragments in the subsoil than the Thurmont soil and are on narrow flood plains
- The somewhat poorly drained Belvoir soils on foot slopes
- Areas that do not have a very stony surface layer

*Similar:*

- Saunook soils that have more organic matter in the surface layer than the Thurmont soil and are in similar landscape positions

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

### **47C—Thurmont loam, 7 to 15 percent slopes, very stony**

#### ***Composition***

Thurmont soil and similar components: 85 to 90 percent

Dissimilar components: 10 to 15 percent

#### ***Setting***

*Depth class:* Very deep

*Drainage class:* Well drained

*Landform:* Upland benches and fans

*Landscape position:* Foot slopes

*Parent material:* Colluvium and local alluvium

*Shape of areas:* Irregular

*Size of areas:* 5 to 50 acres

*Surface cover:* 0.1 to 3 percent stones

#### ***Typical Profile***

0 to 5 inches—dark brown loam

5 to 31 inches—strong brown clay loam and sandy clay loam

31 to 40 inches—strong brown sandy loam

40 to 62 inches—yellowish brown, brown, and strong brown very cobbly loam

#### ***Minor Components***

*Dissimilar:*

- The deep Edneytown soils that formed in residual material and are in landscape positions similar to those of the Thurmont soil
- The moderately deep Peaks soils that formed in residual material and are in landscape positions similar to those of the Thurmont soil
- The well drained and somewhat excessively drained, deep Occoquan soils that formed in residual material and are in landscape positions similar to those of the Thurmont soil
- Craigsville soils that have more rock fragments in the subsoil than the Thurmont soil and are on narrow flood plains

- The somewhat poorly drained Belvoir soils on foot slopes
- Areas that do not have a very stony surface layer

*Similar:*

- Saunook soils that have more organic matter in the surface layer than the Thurmont soil and are in similar landscape positions

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

### **47D—Thurmont loam, 15 to 25 percent slopes, very stony**

#### ***Composition***

Thurmont soil and similar components: 85 to 90 percent

Dissimilar components: 10 to 15 percent

#### ***Setting***

*Depth class:* Very deep

*Drainage class:* Well drained

*Landform:* Upland benches and fans

*Landscape position:* Foot slopes

*Parent material:* Colluvium and local alluvium

*Shape of areas:* Irregular

*Size of areas:* 5 to 50 acres

*Surface cover:* 0.1 to 3 percent stones

#### ***Typical Profile***

0 to 5 inches—dark brown loam

5 to 31 inches—strong brown clay loam and sandy clay loam

31 to 40 inches—strong brown sandy loam

40 to 62 inches—yellowish brown, brown, and strong brown very cobbly loam

#### ***Minor Components***

*Dissimilar:*

- The deep Edneytown soils that formed in residual material and are in landscape positions similar to those of the Thurmont soil
- The moderately deep Peaks soils that formed in residual material and are in landscape positions similar to those of the Thurmont soil
- The well drained and somewhat excessively drained, deep Occoquan soils that formed in residual material and are in landscape positions similar to those of the Thurmont soil

- Craigsville soils that have more rock fragments in the subsoil than the Thurmont soil and are on narrow flood plains

- The somewhat poorly drained Belvoir soils on foot slopes

- Areas that do not have a very stony surface layer

*Similar:*

- Saunook soils that have more organic matter in the surface layer than the Thurmont soil and are in similar landscape positions

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

### **48—Udorthents, smoothed**

#### ***Composition***

Because of the variability of areas of this map unit and the intricate pattern in which Udorthents occur, the composition is not given.

#### ***Setting***

*Depth class:* Very deep

*Drainage class:* Moderately well drained or well drained

*Landform:* Uplands, terraces, and flood plains

*Landscape position:* Summits, shoulders, and back slopes

*Parent material:* Residuum and alluvium

*Shape of areas:* Variable

*Size of areas:* 5 to 200 acres

#### ***Typical Profile***

Udorthents consist of excavations and fill material. The thickness of the fill material varies but is generally more than 20 inches. The fill material is generally soil materials ranging from loamy sand to clay. Rock outcrops are common in the excavations.

### **49B—Unison loam, 2 to 7 percent slopes**

#### ***Composition***

Unison soil and similar components: 85 to 90 percent  
Dissimilar components: 10 to 15 percent

#### ***Setting***

*Depth class:* Very deep

*Drainage class:* Well drained

*Landform:* Upland benches and high stream terraces

*Landscape position:* Summits, shoulders, and foot slopes

*Parent material:* Colluvium and local alluvium

*Shape of areas:* Broad

*Size of areas:* 5 to 50 acres

### **Typical Profile**

0 to 3 inches—brown loam

3 to 44 inches—strong brown silty clay loam and clay loam

44 to 48 inches—strong brown cobbly loam

48 to 62 inches—red, light brown, and strong brown silty clay

### **Minor Components**

#### *Dissimilar:*

- The somewhat excessively drained Occoquan soils on the steeper slopes
- Hayesville soils that formed in red clayey residual material and are in landscape positions similar to those of the Unison soil
- Elioak soils that formed in red clayey residual material and are in landscape positions similar to those of the Unison soil
- Littlejoe soils that formed in red clayey residual material and are in landscape positions similar to those of the Unison soil

#### *Similar:*

- Eroded areas that have a surface layer of clay loam
- Areas that have a red subsoil

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

## **49C—Unison loam, 7 to 15 percent slopes**

### **Composition**

Unison soil and similar components: 85 to 90 percent

Dissimilar components: 10 to 15 percent

### **Setting**

*Depth class:* Very deep

*Drainage class:* Well drained

*Landform:* Upland benches and high stream terraces

*Landscape position:* Shoulders, back slopes, and foot slopes

*Parent material:* Colluvium and local alluvium

*Shape of areas:* Broad to linear

*Size of areas:* 5 to 50 acres

### **Typical Profile**

0 to 3 inches—brown loam

3 to 44 inches—strong brown silty clay loam and clay loam

44 to 48 inches—strong brown cobbly loam

48 to 62 inches—red, light brown, and strong brown silty clay

### **Minor Components**

#### *Dissimilar:*

- The somewhat excessively drained Occoquan soils on the steeper slopes
- Hayesville soils that formed in red clayey residual material and are in landscape positions similar to those of the Unison soil
- Elioak soils that formed in red clayey residual material and are in landscape positions similar to those of the Unison soil
- Littlejoe soils that formed in red clayey residual material and are in landscape positions similar to those of the Unison soil

#### *Similar:*

- Eroded areas that have a surface layer of clay loam
- Areas that have a red subsoil

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

## **49D—Unison loam, 15 to 25 percent slopes**

### **Composition**

Unison soil and similar components: 85 to 90 percent

Dissimilar components: 10 to 15 percent

### **Setting**

*Depth class:* Very deep

*Drainage class:* Well drained

*Landform:* Upland benches and high stream terraces

*Landscape position:* Back slopes

*Parent material:* Colluvium and local alluvium

*Shape of areas:* Linear to irregular

*Size of areas:* 5 to 50 acres

**Typical Profile**

0 to 3 inches—brown loam  
 3 to 44 inches—strong brown silty clay loam and clay loam  
 44 to 48 inches—strong brown cobbly loam  
 48 to 62 inches—red, light brown, and strong brown silty clay

**Minor Components***Dissimilar:*

- The somewhat excessively drained Occoquan soils on the steeper slopes
- Hayesville soils that formed in red clayey residual material and are in landscape positions similar to those of the Unison soil
- Elioak soils that formed in red clayey residual material and are in landscape positions similar to those of the Unison soil
- Littlejoe soils that formed in red clayey residual material and are in landscape positions similar to those of the Unison soil

*Similar:*

- Eroded areas that have a surface layer of clay loam
- Areas that have a red subsoil

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

**50B—Warminster clay loam, 2 to 7 percent slopes****Composition**

Warminster soil and similar components: 85 to 95 percent  
 Dissimilar components: 5 to 15 percent

**Setting**

*Depth class:* Deep  
*Drainage class:* Well drained  
*Landform:* Uplands  
*Landscape position:* Summits, shoulders, and back slopes  
*Parent material:* Residuum derived from Triassic red shale  
*Shape of areas:* Irregular  
*Size of areas:* 5 to 50 acres

**Typical Profile**

0 to 8 inches—yellowish red clay loam

8 to 45 inches—red clay  
 45 to 55 inches—red clay loam  
 55 inches—slightly weathered soft red shale bedrock that crushes to red silt loam

**Minor Components***Dissimilar:*

- The moderately deep Arcola soils in landscape positions similar to those of the Warminster soil
- The very deep Minnieville soils in landscape positions similar to those of the Warminster soil
- The deep Wintergreen soils that formed in colluvial or alluvial material and are in landscape positions similar to those of the Warminster soil

*Similar:*

- Eroded areas that have a surface layer of clay loam or silty clay loam

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

**50C—Warminster clay loam, 7 to 15 percent slopes****Composition**

Warminster soil and similar components: 85 to 95 percent  
 Dissimilar components: 5 to 15 percent

**Setting**

*Depth class:* Deep  
*Drainage class:* Well drained  
*Landform:* Uplands  
*Landscape position:* Shoulders and back slopes  
*Parent material:* Residuum derived from Triassic red shale  
*Shape of areas:* Irregular  
*Size of areas:* 5 to 50 acres

**Typical Profile**

0 to 8 inches—yellowish red clay loam  
 8 to 45 inches—red clay  
 45 to 55 inches—red clay loam  
 55 inches—slightly weathered soft red shale bedrock that crushes to red silt loam

**Minor Components***Dissimilar:*

- The moderately deep Arcola soils in landscape positions similar to those of the Warminster soil

- The very deep Minnieville soils in landscape positions similar to those of the Warminster soil
- The deep Wintergreen soils that formed in colluvial or alluvial material and are in landscape positions similar to those of the Warminster soil

*Similar:*

- Eroded areas that have a surface layer of clay loam or silty clay loam

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

### **50D—Warminster clay loam, 15 to 25 percent slopes**

#### ***Composition***

Warminster soil and similar components: 85 to 95 percent

Dissimilar components: 5 to 15 percent

#### ***Setting***

*Depth class:* Deep

*Drainage class:* Well drained

*Landform:* Uplands

*Landscape position:* Back slopes

*Parent material:* Residuum derived from Triassic red shale

*Shape of areas:* Irregular

*Size of areas:* 5 to 50 acres

#### ***Typical Profile***

0 to 8 inches—yellowish red clay loam

8 to 45 inches—red clay

45 to 55 inches—red clay loam

55 inches—slightly weathered soft red shale bedrock that crushes to red silt loam

#### ***Minor Components***

*Dissimilar:*

- The moderately deep Arcola soils in landscape positions similar to those of the Warminster soil
- The very deep Minnieville soils in landscape positions similar to those of the Warminster soil
- The deep Wintergreen soils that formed in colluvial or alluvial material and are in landscape positions similar to those of the Warminster soil

*Similar:*

- Eroded areas that have a surface layer of clay loam or silty clay loam

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

### **51A—Wingina loam, 0 to 2 percent slopes, occasionally flooded**

#### ***Composition***

Wingina soil and similar components: 85 to 90 percent

Dissimilar components: 10 to 15 percent

#### ***Setting***

*Depth class:* Very deep

*Drainage class:* Well drained

*Landform:* Flood plains

*Landscape position:* Higher areas on flood plains, in areas nearest to streams

*Parent material:* Recent alluvium

*Shape of areas:* Irregular

*Size of areas:* 5 to 50 acres

#### ***Typical Profile***

0 to 23 inches—very dark grayish brown and dark brown loam

23 to 65 inches—brown loam and fine sandy loam

65 to 72 inches—dark yellowish brown loamy sand

#### ***Minor Components***

*Dissimilar:*

- Galtmill soils that have less clay in the subsoil than the Wingina soil and that are in similar landscape positions
- The moderately well drained Batteau soils in depressions and at the base of adjacent terraces and uplands
- The poorly drained Yogaville soils in depressions and at the base of adjacent terraces and uplands

*Similar:*

- Areas that have a lighter colored surface layer than the Wingina soil
- Areas that have a thinner surface layer than the Wingina soil

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

**52B—Wintergreen loam, 2 to 7 percent slopes*****Composition***

Wintergreen soil and similar components: 85 to 95 percent

Dissimilar components: 5 to 15 percent

***Setting***

*Depth class:* Very deep

*Drainage class:* Well drained

*Landform:* Upland benches and high stream terraces

*Landscape position:* Summits, shoulders, and foot slopes

*Parent material:* Colluvium and local alluvium

*Shape of areas:* Broad

*Size of areas:* 5 to 100 acres

***Typical Profile***

0 to 3 inches—dark brown loam

3 to 7 inches—yellowish red loam

7 to 35 inches—red clay

35 to 62 inches—red, strong brown, and pinkish white clay

***Minor Components******Dissimilar:***

- The well drained and somewhat excessively drained Occoquan soils that have less clay in the subsoil than the Wintergreen soil and that are on the steeper back slopes
- Hayesville soils that formed in residual material and are in landscape positions similar to those of the Wintergreen soil
- Elioak soils that formed in residual material and are in landscape positions similar to those of the Wintergreen soil
- Littlejoe soils that formed in residual material and are in landscape positions similar to those of the Wintergreen soil

***Similar:***

- Eroded areas that have a surface layer of clay loam
- Areas that are yellowish brown to yellowish red in the subsoil

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils” (fig. 7).

**52C—Wintergreen loam, 7 to 15 percent slopes*****Composition***

Wintergreen soil and similar components: 85 to 95 percent

Dissimilar components: 5 to 15 percent

***Setting***

*Depth class:* Very deep

*Drainage class:* Well drained

*Landform:* Upland benches and high stream terraces

*Landscape position:* Shoulders, back slopes, and foot slopes

*Parent material:* Colluvium and local alluvium

*Shape of areas:* Broad

*Size of areas:* 5 to 100 acres

***Typical Profile***

0 to 3 inches—dark brown loam

3 to 7 inches—yellowish red loam

7 to 35 inches—red clay

35 to 62 inches—red, strong brown, and pinkish white clay

***Minor Components******Dissimilar:***

- The well drained and somewhat excessively drained Occoquan soils that have less clay in the subsoil than the Wintergreen soil and that are on the steeper back slopes
- Hayesville soils that formed in residual material and are in landscape positions similar to those of the Wintergreen soil
- Elioak soils that formed in residual material and are in landscape positions similar to those of the Wintergreen soil
- Littlejoe soils that formed in residual material and are in landscape positions similar to those of the Wintergreen soil

***Similar:***

- Eroded areas that have a surface layer of clay loam
- Areas that are yellowish brown to yellowish red in the subsoil

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”



Figure 7.—No-till corn on Wintergreen loam, 2 to 7 percent slopes.

## 52D—Wintergreen loam, 15 to 25 percent slopes

### **Composition**

Wintergreen soil and similar components: 85 to 95 percent

Dissimilar components: 5 to 15 percent

### **Setting**

*Depth class:* Very deep

*Drainage class:* Well drained

*Landform:* Upland benches and high stream terraces

*Landscape position:* Back slopes

*Parent material:* Colluvium and local alluvium

*Shape of areas:* Broad

*Size of areas:* 5 to 100 acres

### **Typical Profile**

0 to 3 inches—dark brown loam

3 to 7 inches—yellowish red loam

7 to 35 inches—red clay

35 to 62 inches—red, strong brown, and pinkish white clay

### **Minor Components**

#### *Dissimilar:*

- The well drained and somewhat excessively drained Occoquan soils that have less clay in the subsoil than the Wintergreen soil and are on the steeper back slopes
- Hayesville soils that formed in residual material and are in landscape positions similar to those of the Wintergreen soil
- Elioak soils that formed in residual material and are

in landscape positions similar to those of the Wintergreen soil

- Littlejoe soils that formed in residual material and are in landscape positions similar to those of the Wintergreen soil

*Similar:*

- Eroded areas that have a surface layer of clay loam
- Areas that are yellowish brown to yellowish red in the subsoil

Additional information specific to the soils in this map unit is available in the section "Soil Properties." For general and detailed information about managing the map unit, refer to the section "Use and Management of the Soils."

### **53B—Wintergreen clay loam, 2 to 7 percent slopes, severely eroded**

#### ***Composition***

Wintergreen soil and similar components: 85 to 95 percent

Dissimilar components: 5 to 15 percent

#### ***Setting***

*Depth class:* Very deep

*Drainage class:* Well drained

*Landform:* Upland benches and high stream terraces

*Landscape position:* Summits and shoulders

*Parent material:* Colluvium and local alluvium

*Shape of areas:* Broad

*Size of areas:* 5 to 50 acres

#### ***Typical Profile***

0 to 7 inches—yellowish red clay loam

7 to 35 inches—red clay

35 to 62 inches—red, strong brown, and pinkish white clay

#### ***Minor Components***

*Dissimilar:*

- The well drained and somewhat excessively drained Occoquan soils that have less clay in the subsoil than the Wintergreen soil and that are on the steeper back slopes
- Hayesville soils that formed in residual material and are in landscape positions similar to those of the Wintergreen soil
- Elioak soils that formed in residual material and are in landscape positions similar to those of the Wintergreen soil
- Littlejoe soils that formed in residual material and

are in landscape positions similar to those of the Wintergreen soil

*Similar:*

- Noneroded areas that have a surface layer of loam
- Areas that are yellowish brown to yellowish red in the subsoil

Additional information specific to the soils in this map unit is available in the section "Soil Properties." For general and detailed information about managing the map unit, refer to the section "Use and Management of the Soils."

### **53C—Wintergreen clay loam, 7 to 15 percent slopes, severely eroded**

#### ***Composition***

Wintergreen soil and similar components: 85 to 95 percent

Dissimilar components: 5 to 15 percent

#### ***Setting***

*Depth class:* Very deep

*Drainage class:* Well drained

*Landform:* Upland benches and high stream terraces

*Landscape position:* Shoulders and back slopes

*Parent material:* Colluvium and local alluvium

*Shape of areas:* Broad

*Size of areas:* 5 to 50 acres

#### ***Typical Profile***

0 to 7 inches—yellowish red clay loam

7 to 35 inches—red clay

35 to 62 inches—red, strong brown, and pinkish white clay

#### ***Minor Components***

*Dissimilar:*

- The well drained and somewhat excessively drained Occoquan soils that have less clay in the subsoil than the Wintergreen soil and that are on the steeper back slopes
- Hayesville soils that formed in residual material and are in landscape positions similar to those of the Wintergreen soil
- Elioak soils that formed in residual material and are in landscape positions similar to those of the Wintergreen soil
- Littlejoe soils that formed in residual material and are in landscape positions similar to those of the Wintergreen soil

*Similar:*

- Noneroded areas that have a surface layer of loam
- Areas that are yellowish brown to yellowish red in the subsoil

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

### **53D—Wintergreen clay loam, 15 to 25 percent slopes, severely eroded**

#### ***Composition***

Wintergreen soil and similar components: 85 to 95 percent

Dissimilar components: 5 to 15 percent

#### ***Setting***

*Depth class:* Very deep

*Drainage class:* Well drained

*Landform:* Upland benches and high stream terraces

*Landscape position:* Back slopes

*Parent material:* Colluvium and local alluvium

*Shape of areas:* Narrow and linear

*Size of areas:* 5 to 50 acres

#### ***Typical Profile***

0 to 7 inches—yellowish red clay loam

7 to 35 inches—red clay

35 to 62 inches—red, strong brown, and pinkish white clay

#### ***Minor Components***

*Dissimilar:*

- The well drained and somewhat excessively drained Occoquan soils that have less clay in the subsoil than the Wintergreen soil and that are on the steeper back slopes
- Hayesville soils that formed in residual material and are in landscape positions similar to those of the Wintergreen soil
- Elioak soils that formed in residual material and are in landscape positions similar to those of the Wintergreen soil
- Littlejoe soils that formed in residual material and are in landscape positions similar to those of the Wintergreen soil

*Similar:*

- Noneroded areas that have a surface layer of loam
- Areas that are yellowish brown to yellowish red in the subsoil

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

### **54C—Wintergreen loam, 7 to 15 percent slopes, very stony**

#### ***Composition***

Wintergreen soil and similar components: 85 to 90 percent

Dissimilar components: 10 to 15 percent

#### ***Setting***

*Depth class:* Very deep

*Drainage class:* Well drained

*Landform:* Upland benches and high stream terraces

*Landscape position:* Upland summits and back slopes

*Parent material:* Colluvium and local alluvium

*Shape of areas:* Broad to linear

*Size of areas:* 5 to 30 acres

*Surface cover:* 0.1 to 3 percent

#### ***Typical Profile***

0 to 3 inches—dark brown loam

3 to 7 inches—yellowish red loam

7 to 35 inches—red clay

35 to 62 inches—red, strong brown, and pinkish white clay

#### ***Minor Components***

*Dissimilar:*

- The well drained and somewhat excessively drained Occoquan soils that have less clay in the subsoil than the Wintergreen soil and that are on the steeper back slopes
- Hayesville soils that formed in residual material and are in landscape positions similar to those of the Wintergreen soil
- Elioak soils that formed in residual material and are in landscape positions similar to those of the Wintergreen soil
- Littlejoe soils that formed in residual material and are in landscape positions similar to those of the Wintergreen soil
- Areas that do not have stones on the surface

*Similar:*

- Areas that are yellowish brown to yellowish red in the subsoil

Additional information specific to the soils in this map unit is available in the section “Soil Properties.”

For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”

### **55A—Yogaville loam, 0 to 2 percent slopes, occasionally flooded**

#### ***Composition***

Yogaville soil and similar components: 85 to 90 percent

Dissimilar components: 10 to 15 percent

#### ***Setting***

*Depth class:* Very deep

*Drainage class:* Poorly drained

*Landform:* Flood plains

*Landscape position:* Depressions and areas at the base of adjacent terraces and uplands

*Parent material:* Recent alluvium

*Shape of areas:* Irregular to linear

*Size of areas:* 5 to 50 acres

#### ***Typical Profile***

0 to 7 inches—dark brown loam

7 to 20 inches—very dark grayish brown loam that has yellowish brown iron masses

20 to 50 inches—dark grayish brown and gray clay loam that has strong brown and yellowish brown iron masses

50 to 72 inches—dark gray, grayish brown, and very dark gray clay loam that has strong brown iron masses

#### ***Minor Components***

##### *Dissimilar:*

- The well drained Galtsmill soils in the higher flood plain positions, nearest to the streams
- The moderately well drained Batteau soils in landscape positions similar to those of the Yogaville soil
- Sandy soils, cobbly soils, and soils that have a gravelly surface layer

##### *Similar:*

- Areas that have a lighter colored surface layer than the Yogaville soil

Additional information specific to the soils in this map unit is available in the section “Soil Properties.” For general and detailed information about managing the map unit, refer to the section “Use and Management of the Soils.”



# Use and Management of the Soils

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This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help to prevent soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavioral characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis for predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as woodland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities; and for wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Generally, the soils in Nelson County that are well suited to crops are also well suited to urban uses. The data concerning specific soils in the county can be used in planning future land use patterns. The potential for farming should be considered relative to any soil limitations and the potential for nonfarm development.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

## Crops and Pasture

General management needed for crops and pasture is suggested in this section. The crops or pasture plants best suited to the soils are identified, the system of land capability classification used by the Natural Resources Conservation Service is explained, the estimated yields of the main crops and hay and pasture plants are listed for each soil, and prime farmland is described.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under the heading "Detailed Soil Map Units" and in the tables. Specific information can be obtained from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

According to the 1987 Census of Agriculture Advance County Report, Nelson County has about 31,800 acres of cropland. This total consists of about 1,700 acres used for row crops (such as corn), 2,100 acres used for orchards (such as apples), 11,000 acres used for hay, 14,000 acres of pasture, 750 acres of pastured woodland, and 2,250 acres in miscellaneous uses.

The acreage of cultivated crops in the county has been gradually decreasing. The acreage of pasture has been increasing because more beef cattle are being raised. Some of the acreage of cropland and pasture has been converted to community development.

*Federal and State regulations require that any area designated as wetlands cannot be altered without prior approval. Contact the local office of the Natural Resources Conservation Service for identification of hydric soils and potential wetlands.*

Soil erosion is the major concern on most of the cropland in Nelson County. Most of the soils in the county, except for those on flood plains and some low stream terraces, have slopes of more than 2 percent and thus have a moderate or severe hazard of erosion.

Erosion of the surface layer reduces the organic matter content, water-holding capacity, and fertility of the soil. As a result, the potential productivity of the

soil is reduced and preparing a seedbed is difficult. Erosion also can result in the sedimentation of streams and lakes, which lowers the quality of water for fish and wildlife.

Erosion is especially damaging on soils that have a clayey subsoil and on soils that have bedrock near the surface. For example, in areas of Elioak, Hayesville, and Wintergreen soils, erosion of the surface layer exposes a clayey subsoil that is less productive than the original surface layer and more difficult to till. In areas of Catoctin, Hazel, and Peaks soils, erosion exposes less productive soil material and also decreases the amount of productive soil material overlying the bedrock.

Erosion-control practices provide a protective surface cover, reduce runoff, and increase the rate of water infiltration. A cropping system that keeps a vegetative cover on the soil for extended periods helps to minimize soil loss and maintain the productive capacity of the soil. A conservation cropping system that consists of a rotation of hay or pasture crops and row crops reduces erosion, increases the organic matter content of the surface layer, increases fertility and available water capacity, and improves soil tilth.

Using sod in waterways and contour tillage are common erosion-control practices in the survey area and are suited to most areas of Buffstat, Elioak, Hayesville, Littlejoe, Minnieville, Unison, and Wintergreen soils.

Using conservation tillage, planting winter cover crops, and leaving crop residue on the surface are suitable practices on most of the soils in the county. These practices, however, are more difficult to use in severely eroded areas than in areas that have little or no erosion.

Fertility is low in most of the soils in Nelson County, and most unlimed areas are strongly acid or very strongly acid. Applications of lime and fertilizer are needed for crop production on most of the soils.

Drainage is needed on a small acreage of cropland in the county. Belvoir, Chatuge, Codorus, and Hatboro soils are so wet that they require subsurface drainage systems for the production of crops commonly grown in the county. Codorus and Chatuge soils often remain wet through spring, and clods form on the surface if the soils are plowed when wet. The type of drainage system needed varies according to the soil type. Subsurface drainage lines generally are needed for slowly permeable soils.

Field crops suited to the soils and climate of the survey area are corn, soybeans, wheat, rye, barley, and oats. Conservation cropping systems that use rotations of grasses and legumes in conjunction with these crops help to maintain good tilth and fertility.

Pastures consist of tall fescue (fig. 8), orchardgrass, and clover. The major pasture management concerns are preventing overgrazing and maintaining a mixture of grasses and legumes. The common pasture management practices are weed control, the use of proper stocking rates, rotational grazing, restriction of grazing when the soils are wet, and applications of lime and fertilizer. The major plants grown for hay are Kentucky-31 fescue, orchardgrass, ryegrass, red clover, and alfalfa.

The main specialty crops grown in the county are apples, peaches, nectarines, grapes, vegetables, strawberries, and nursery plants. Most of the deep, well drained, upland soils are suited to these specialty crops. Good air drainage is essential for fruits and early season vegetables.

### **Yields per Acre**

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 6. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors. The land capability classification of each map unit also is shown in the table.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations are also considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

A high level of management includes maintaining proper soil reaction and fertility levels as indicated by standard soil tests. The application rate of nitrogen for corn on soils that have a yield potential of 125 to 150 bushels per acre should be 140 to 160 pounds per acre. If the yield potential for corn is 100 bushels per acre or less, a rate of 100 to 120 pounds of nitrogen per acre should be used. The application of nitrogen in excess of that required for potential yields generally is not recommended. The excess nitrogen fertilizer that is not utilized by the crop is an unnecessary expense and causes a hazard of water pollution. If corn or



Figure 8.—Hay bales of tall fescue in an area of Hayesville loam, 2 to 7 percent slopes.

cotton is grown after the harvest of soybeans or peanuts, nitrogen rates can be reduced by about 20 to 30 pounds per acre. Because nitrogen can be readily leached from sandy soils, applications may be needed on these soils more than once during the growing season.

For yields of irrigated crops, it is assumed that the irrigation system is adapted to the soils and to the crops grown, that good-quality irrigation water is uniformly applied as needed, and that tillage is kept to a minimum.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in table 6 are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local

office of the Natural Resources Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

### Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for woodland and for engineering purposes.

In the capability system, soils are generally grouped at three levels—capability class, subclass, and unit. Only class and subclass are used in this survey.

*Capability classes*, the broadest groups, are designated by numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class I soils have few limitations that restrict their use.

Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class III soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

Class IV soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

Class V soils are not likely to erode but have other limitations, impractical to remove, that limit their use.

Class VI soils have severe limitations that make them generally unsuitable for cultivation.

Class VII soils have very severe limitations that make them unsuitable for cultivation.

Class VIII soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production.

*Capability subclasses* are soil groups within one class. They are designated by adding a small letter, *e*, *w*, *s*, or *c*, to the class numeral, for example, IIe. The letter *e* shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class I there are no subclasses because the soils of this class have few limitations. Class V contains only the subclasses indicated by *w*, *s*, or *c* because the soils in class V are subject to little or no erosion. They have other limitations that restrict their use to pasture, woodland, wildlife habitat, or recreation.

The capability classification of each map unit is given in table 6.

### Prime Farmland

Prime farmland is one of several kinds of important farmland defined by the U.S. Department of Agriculture. It is of major importance in meeting the

Nation's short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forest land, or other land, but it is not urban or built-up land or water areas. The soil qualities, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. It is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. The slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

About 35,554 acres in the survey area, or about 12 percent of the total acreage, meets the soil requirements for prime farmland. This land is mainly east of the Blue Ridge Mountains.

A recent trend in land use in some parts of the survey area has been the loss of some prime farmland to industrial and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and cannot be easily cultivated.

The map units in the survey area that are considered prime farmland are listed in table 7. This list does not constitute a recommendation for a particular land use. On some soils included in the list, measures used to overcome a hazard or limitation, such as flooding, wetness, and droughtiness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures. The extent of each listed map unit is shown in table 5. The location is shown on the detailed soil maps. The soil qualities that affect use and management are described under the heading "Detailed Soil Map Units."



Figure 9.—A loblolly pine plantation in an area of Littlejoe silt loam, 2 to 7 percent slopes.

## Woodland Management and Productivity

Nelson County was originally covered with virgin forest, but most of the land suitable for cultivation has since been cleared. The remaining woodland is generally too steep, too stony, or too wet for farming. It is composed of second-growth hardwoods, shortleaf pine, and Virginia pine.

About 80 percent of the county is currently woodland. About 5 percent of the woodland is in the George Washington National Forest, which primarily occupies the mountainous regions of the county. Most of the other forested areas are privately owned.

The most common tree species in the Blue Ridge are red oak, chestnut oak, black oak, maple, hickory, poplar, black birch, hemlock, and eastern white pine. The major tree species in the Piedmont are red oak, chestnut oak, maple, hickory, poplar, Virginia pine, shortleaf pine, and loblolly pine (fig. 9).

Most of the eastern third of the county is planted in loblolly pine and is managed by timber companies. Eastern white pine is the major tree species planted in the western part of the county.

Timber management practices include thinning, clearcutting, controlled burning, and reforestation. Erosion is the major management concern during timber harvest and after reseeding.

Table 8 can be used by woodland owners or forest managers in planning the use of soils for wood crops. Only those soils suitable for wood crops are listed. The table lists the ordination symbol for each soil. Soils assigned the same ordination symbol require the same general management and have about the same potential productivity.

The first part of the *ordination symbol*, a number, indicates the potential productivity of the soils for an indicator tree species. The number indicates the volume, in cubic meters per hectare per year, which

the indicator species can produce in a pure stand under natural conditions. The number 1 indicates low potential productivity; 2 or 3, moderate; 4 or 5, moderately high; 6 to 8, high; 9 to 11, very high; and 12 to 39, extremely high. The second part of the symbol, a letter, indicates the major kind of soil limitation. The letter *R* indicates steep slopes; *X*, stoniness or rockiness; *W*, excess water in or on the soil; *T*, toxic substances in the soil; *D*, restricted rooting depth; *C*, clay in the upper part of the soil; *S*, sandy texture; *F*, a high content of rock fragments in the soil; *L*, low strength; and *N*, snowpack. The letter *A* indicates that limitations or restrictions are insignificant. If a soil has more than one limitation, the priority is as follows: *R*, *X*, *W*, *T*, *D*, *C*, *S*, *F*, *L*, and *N*.

In table 8, *slight*, *moderate*, and *severe* indicate the degree of the major soil limitations to be considered in management.

*Erosion hazard* is the probability that damage will occur as a result of site preparation and cutting where the soil is exposed along roads, skid trails, and fire lanes and in log-handling areas. Forests that have been burned or overgrazed are also subject to erosion. Ratings of the erosion hazard are based on the percent of the slope. A rating of *slight* indicates that no particular prevention measures are needed under ordinary conditions. A rating of *moderate* indicates that erosion-control measures are needed in certain silvicultural activities. A rating of *severe* indicates that special precautions are needed to control erosion in most silvicultural activities.

*Equipment limitation* reflects the characteristics and conditions of the soil that restrict use of the equipment generally needed in woodland management or harvesting. The chief characteristics and conditions considered in the ratings are slope, stones on the surface, rock outcrops, soil wetness, and texture of the surface layer. A rating of *slight* indicates that under normal conditions the kind of equipment and season of use are not significantly restricted by soil factors. Soil wetness can restrict equipment use, but the wet period does not exceed 1 month. A rating of *moderate* indicates that equipment use is moderately restricted because of one or more soil factors. If the soil is wet, the wetness restricts equipment use for a period of 1 to 3 months. A rating of *severe* indicates that equipment use is severely restricted either as to the kind of equipment that can be used or the season of use. If the soil is wet, the wetness restricts equipment use for more than 3 months.

*Seedling mortality* refers to the death of naturally occurring or planted tree seedlings, as influenced by the kinds of soil, soil wetness, or topographic conditions. The factors used in rating the soils for

seedling mortality are texture of the surface layer, depth to a high water table and the length of the period when the water table is high, rock fragments in the surface layer, effective rooting depth, and slope aspect. A rating of *slight* indicates that seedling mortality is not likely to be a problem under normal conditions. Expected mortality is less than 25 percent. A rating of *moderate* indicates that some problems from seedling mortality can be expected. Extra precautions are advisable. Expected mortality is 25 to 50 percent. A rating of *severe* indicates that seedling mortality is a serious problem. Extra precautions are important. Replanting may be necessary. Expected mortality is more than 50 percent.

*Windthrow hazard* is the likelihood that trees will be uprooted by the wind because the soil is not deep enough for adequate root anchorage. The main restrictions that affect rooting are a high water table and the depth to bedrock, a fragipan, or other limiting layers. A rating of *slight* indicates that under normal conditions no trees are blown down by the wind. Strong winds may damage trees, but they do not uproot them. A rating of *moderate* indicates that some trees can be blown down during periods when the soil is wet and winds are moderate or strong. A rating of *severe* indicates that many trees can be blown down during these periods.

The *potential productivity* of merchantable or *common trees* on a soil is expressed as a *site index* and as a *volume* number. The site index is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. Commonly grown trees are those that woodland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability.

The *volume*, a number, is the yield likely to be produced by the most important trees. This number, expressed as cubic feet per acre per year, indicates the amount of fiber produced in a fully stocked, even-aged, unmanaged stand.

The first species listed under *common trees* for a soil is the indicator species for that soil. It generally is the most common species on the soil and is the one that determines the ordination class.

*Trees to plant* are those that are suitable for commercial wood production.

## Recreation

The James, Tye, Piney, and Rockfish Rivers provide many recreational opportunities, including boating,



Figure 10.—Recreational skiing in an area of Myersville-Catoctin complex, 15 to 35 percent slopes, extremely stony.

fishing, swimming, and hunting. Several public boat landings are located along the James River.

Upland and mountain areas provide opportunities for hunting, fishing, camping, hiking, and skiing (fig. 10). The George Washington National Forest, the Blue Ridge Parkway, the James River Wildlife Management Area, Lake Nelson, and the Lesesne State Forest are also available for public recreation. Several private camping facilities are located throughout the county.

The soils of the survey area are rated in table 9 according to the limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines.

The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation are also important. Soils subject to flooding are limited for recreational uses by the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

In table 9, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable and that limitations are minor and easily overcome. *Moderate* means that limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or a combination of these measures.

The information in table 9 can be supplemented by other information in this survey, for example,

interpretations for septic tank absorption fields in table 14 and interpretations for dwellings without basements and for local roads and streets in table 11.

*Camp areas* require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils have gentle slopes and are not wet or subject to flooding during the period of use. The surface has few or no stones or boulders, absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing campsites.

*Picnic areas* are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for picnic areas are firm when wet, are not dusty when dry, are not subject to flooding during the period of use, and do not have slopes or stones or boulders that increase the cost of shaping sites or of building access roads and parking areas.

*Playgrounds* require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet or subject to flooding during the period of use. The surface is free of stones and boulders, is firm after rains, and is not dusty when dry. If grading is needed, the depth of the soil over bedrock should be considered.

*Paths and trails* for hiking and horseback riding should require little or no cutting and filling. The best soils are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once a year during the period of use. They have moderate slopes and few or no stones or boulders on the surface.

*Golf fairways* are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. The best soils for use as golf fairways are firm when wet, are not dusty when dry, and are not subject to prolonged flooding during the period of use. They have moderate slopes and no stones or boulders on the surface. The suitability of the soil for tees or greens is not considered in rating the soils.

## Wildlife Habitat

Woodland, cropland, and wetland in Nelson County support a variety of fish and wildlife populations. The large wooded tracts that occur throughout the county and the wooded margins of fields support large numbers of white-tailed deer, wild turkey, black bear, red fox, gray fox, and squirrels. Areas of cropland

throughout the county provide habitat for cottontail, ground hog, quail, mourning dove, and many other species of birds. Areas of wetland along rivers and streams support beaver, muskrat, turtles, and several species of waterfowl.

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.

In table 10, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat. The ratings in table 10 are intended to be used as a guide and are not site specific. Onsite investigation is needed for individual management plans.

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* indicates that the element or kind of habitat is easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected. A rating of *fair* indicates that the element or kind of habitat can be established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* indicates that limitations are severe for the designated element or kind of habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* indicates that restrictions for the element or kind of habitat are very severe and that unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.

The elements of wildlife habitat are described in the following paragraphs.

*Grain and seed crops* are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flooding. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, wheat, oats, and barley.

*Grasses and legumes* are domestic perennial

grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flooding, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes are fescue, timothy, bromegrass, clover, and alfalfa.

*Wild herbaceous plants* are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flooding. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are bluestem, goldenrod, beggartick, quackgrass, and ragweed.

*Hardwood trees* and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are depth of the root zone, available water capacity, and wetness. Examples of these plants are oak, birch, cherry, maple, apple, hawthorn, dogwood, hickory, blackberry, and blueberry. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are gray dogwood, autumn-olive, and crabapple.

*Coniferous plants* furnish browse and seeds. Soil properties and features that affect the growth of coniferous trees, shrubs, and ground cover are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pine, spruce, yew, cedar, and hemlock.

*Wetland plants* are annual and perennial wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, slope, and surface stoniness. Examples of wetland plants are smartweed, arrowhead, burreed, pickerelweed, cordgrass, rushes, sedges, and reeds.

*Shallow water areas* have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. Examples of shallow water areas are marshes, swamps, and ponds.

The habitat for various kinds of wildlife is described in the following paragraphs.

*Habitat for openland wildlife* consists of cropland, pasture, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain

and seed crops, grasses and legumes, and wild herbaceous plants. Wildlife attracted to these areas include bobwhite quail, meadow vole, meadowlark, field sparrow, cottontail, and red fox.

*Habitat for woodland wildlife* consists of areas of deciduous plants or coniferous plants, or both, and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include wild turkey, ruffed grouse, woodcock, thrushes, woodpeckers, squirrels, gray fox, raccoon, and deer.

*Habitat for wetland wildlife* consists of open, marshy or swampy shallow water areas. Some of the wildlife attracted to such areas are ducks, geese, herons, shore birds, muskrat, frogs, and tree swallow.

## Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. Ratings are given for building site development, sanitary facilities, construction materials, and water management. The ratings are based on observed performance of the soils and on the estimated data and test data in the "Soil Properties" section.

*Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil within a depth of 5 or 6 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.*

*The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.*

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations should be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 or 6 feet of the surface, soil wetness, depth to a high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected

about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kind of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, earthfill, and topsoil; plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey, can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

### **Building Site Development**

Table 11 shows the degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

*Shallow excavations* are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, and other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging, filling, and compacting is affected by the depth

to bedrock or a very firm, dense layer; stone content; soil texture; and slope. The time of the year that excavations can be made is affected by the depth to a high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and depth to the high water table.

*Dwellings and small commercial buildings* are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are made for small commercial buildings without basements, for dwellings with basements, and for dwellings without basements. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, shrinking and swelling, and organic layers can cause the movement of footings. Depth to a high water table, depth to bedrock, large stones, and flooding affect the ease of excavation and construction. Landscaping and grading that require cuts and fills of more than 5 or 6 feet are not considered.

Table 12 lists general corrective measures for limitations affecting dwellings. The listed measures are not recommendations but may help to reduce the limitations.

*Local roads and streets* have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or stabilized soil material; and a flexible or rigid surface. Cuts and fills are generally limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of the soils. Depth to bedrock, depth to a high water table, flooding, large stones, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, frost action potential, and depth to a high water table affect the traffic-supporting capacity.

*Lawns and landscaping* require soils on which turf and ornamental trees and shrubs can be established and maintained. The ratings are based on soil properties, site features, and observed performance of the soils. Soil reaction, depth to a high water table, depth to bedrock, and the available water capacity in the upper 40 inches affect plant growth. Flooding, wetness, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer affect trafficability after vegetation is established. Soil tests are essential to determine liming and fertilizer needs. Help in making soil tests or in deciding what soil additive, if any, should be used can be obtained from the office of the Thomas Jefferson Soil and Water

Conservation District or the local office of the Cooperative Extension Service.

Table 13 lists general corrective measures for limitations affecting lawns and landscaping. The listed measures are not recommendations but may help to reduce the limitations.

### Sanitary Facilities

Table 14 shows the degree and the kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfills. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required.

Table 14 also shows the suitability of the soils for use as daily cover for landfill. A rating of *good* indicates that soil properties and site features are favorable for the use and that good performance and low maintenance can be expected; *fair* indicates that soil properties and site features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated good; and *poor* indicates that one or more soil properties or site features are unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or costly alteration.

*Septic tank absorption fields* are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 72 inches is evaluated. The ratings are based on soil properties, site features, and observed performance of the soils. Permeability, depth to a high water table, depth to bedrock, and flooding affect absorption of the effluent. Large stones and bedrock interfere with installation.

Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, and hillside seepage, can affect public health. Ground water can be polluted if highly permeable sand and gravel or fractured bedrock is less than 4 feet below the base of the absorption field, if slope is excessive, or if the water table is near the surface. There must be unsaturated soil material beneath the absorption field

to filter the effluent effectively. Many local ordinances require that this material be of a certain thickness.

Table 15 lists general corrective measures for limitations affecting septic tank absorption fields. The listed measures are not recommendations but may help to reduce the limitations.

*Sewage lagoons* are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Lagoons generally are designed to hold the sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water. The animal waste lagoons commonly used in farming operations are not considered in the ratings. They are generally deeper than the lagoons referred to in table 14 and rely on anaerobic bacteria to decompose waste materials.

Table 14 gives ratings for the natural soil that makes up the lagoon floor. The surface layer and, generally, 1 or 2 feet of soil material below the surface layer are excavated to provide material for the embankments. The ratings are based on soil properties, site features, and observed performance of the soils. Considered in the ratings are slope, permeability, depth to a high water table, depth to bedrock, flooding, large stones, and content of organic matter.

Excessive seepage resulting from rapid permeability in the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if floodwater overtops the lagoon. A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope or bedrock can cause construction problems, and large stones can hinder compaction of the lagoon floor.

*Sanitary landfills* are areas where solid waste is disposed of by burying it in soil. There are two types of landfill—trench and area. In a trench landfill, the waste is placed in a trench. It is spread, compacted, and covered daily with a thin layer of soil excavated at the site. In an area landfill, the waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site.

Both types of landfill must be able to bear heavy vehicular traffic. Both types involve a risk of ground-water pollution. Ease of excavation and revegetation should be considered.

The ratings in table 14 are based on soil properties, site features, and observed performance of the soils.

Permeability, depth to bedrock, a high water table, slope, and flooding affect both types of landfill. Texture, stones and boulders, highly organic layers, soil reaction, and content of salts and sodium affect trench landfills. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, a limitation rated slight or moderate may not be valid. Onsite investigation is needed.

*Daily cover for landfill* is the soil material that is used to cover compacted solid waste in an area sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste.

Soil texture, wetness, coarse fragments, and slope affect the ease of removing and spreading the material during wet and dry periods. Loamy or silty soils that are free of large stones or excess gravel are the best cover for a landfill. Clayey soils are sticky or cloddy and are difficult to spread; sandy soils are subject to soil blowing.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock or the water table to permit revegetation. The soil material used as the final cover for a landfill should be suitable for plants. The surface layer generally has the best workability, more organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

### Construction Materials

Table 16 gives information about the soils as a source of roadfill, sand, gravel, and topsoil. The soils are rated *good*, *fair*, or *poor* as a source of roadfill and topsoil. They are rated as a *probable* or *improbable* source of sand and gravel. The ratings are based on soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

*Roadfill* is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the soil material below the surface layer to a depth of 5 or 6 feet. It is assumed that soil layers will be mixed during excavating and spreading. Many soils have layers of contrasting suitability within their profile. The table showing engineering index properties provides detailed information about each soil layer. This information can

help to determine the suitability of each layer for use as roadfill. The performance of soil after it is stabilized with lime or cement is not considered in the ratings.

The ratings are based on soil properties, site features, and observed performance of the soils. The thickness of suitable material is a major consideration. The ease of excavation is affected by large stones, depth to a high water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the engineering classification of the soil) and shrink-swell potential.

Soils rated *good* contain significant amounts of sand or gravel or both. They have at least 5 feet of suitable material, a low shrink-swell potential, few cobbles and stones, and slopes of 15 percent or less. Depth to the high water table is more than 3 feet. Soils rated *fair* have more than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have a moderate shrink-swell potential, slopes of 15 to 25 percent, or many stones. Depth to the high water table is 1 to 3 feet. Soils rated *poor* have a plasticity index of more than 10, a high shrink-swell potential, many stones, or slopes of more than 25 percent. They are wet and have a high water table at a depth of less than 1 foot. They may have layers of suitable material, but the material is less than 3 feet thick.

*Sand* and *gravel* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In table 16, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the engineering classification of the soil), the thickness of suitable material, and the content of rock fragments. Kinds of rock, acidity, and stratification are given in the soil series descriptions. Gradation of grain sizes is given in the table on engineering index properties.

A soil rated as a probable source has a layer of clean sand or gravel or a layer of sand or gravel that is up to 12 percent silty fines. This material must be at least 3 feet thick and less than 50 percent, by weight, large stones. All other soils are rated as an improbable source. Coarse fragments of soft bedrock, such as shale, siltstone, and weathered granite saprolite, are not considered to be sand and gravel.

*Topsoil* is used to cover an area so that vegetation can be established and maintained. The upper 40

inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area.

Plant growth is affected by toxic material and by such properties as soil reaction, available water capacity, and fertility. The ease of excavating, loading, and spreading is affected by rock fragments, slope, a high water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, a high water table, rock fragments, bedrock, and toxic material.

Soils rated *good* have friable, loamy material to a depth of at least 40 inches. They are free of stones and cobbles, have little or no gravel, and have slopes of less than 8 percent. They are naturally fertile or respond well to fertilizer and are not so wet that excavation is difficult.

Soils rated *fair* are sandy soils, loamy soils that have a relatively high content of clay, soils that have only 20 to 40 inches of suitable material, soils that have an appreciable amount of gravel or stones, or soils that have slopes of 8 to 15 percent. The soils are not so wet that excavation is difficult.

Soils rated *poor* are very sandy or clayey, have less than 20 inches of suitable material, have a large amount of gravel or stones, have slopes of more than 15 percent, or have a high water table at or near the surface.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

## Water Management

Table 17 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas and for embankments, dikes, and levees. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

This table also gives the restrictive features that affect each soil for drainage, irrigation, terraces and diversions, and grassed waterways.

*Pond reservoir areas* hold water behind a dam or

embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area. Ponds that are less than about 2 acres in size are not shown on the maps because of the scale of mapping.

*Embankments, dikes, and levees* are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, mica, or salts or sodium. Depth to a high water table affects the amount of usable material. It also affects trafficability.

*Drainage* is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock or to other layers that affect the rate of water movement, permeability, depth to a high water table or depth of standing water if the soil is subject to ponding, slope, susceptibility to flooding, subsidence of organic layers, and the potential for frost action. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock, large stones, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as salts, sodium, and sulfur. Availability of drainage outlets is not considered in the ratings.

*Drainage may be a major management consideration in some areas. Management of drainage in conformance with regulations concerning wetlands may require special permits and extra planning. The local office of the Natural Resources Conservation Service should be contacted for identification of hydric soils and potential wetlands.*

*Irrigation* is the controlled application of water to supplement rainfall and support plant growth. The

design and management of an irrigation system are affected by depth to a high water table, the need for drainage, flooding, available water capacity, intake rate, permeability, erosion hazard, and slope. The construction of a system is affected by large stones and depth to bedrock. The performance of a system is affected by the availability of suitable irrigation water, the depth of the root zone, and soil reaction.

*Terraces and diversions* are embankments or a combination of channels and ridges constructed across a slope to control erosion and conserve moisture by intercepting runoff. Slope, wetness, large stones, and depth to bedrock affect the construction of terraces and diversions. A restricted rooting depth, a

severe hazard of soil blowing or water erosion, an excessively coarse texture, and restricted permeability adversely affect maintenance.

*Grassed waterways* are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Large stones, wetness, slope, and depth to bedrock affect the construction of grassed waterways. A hazard of soil blowing, a low available water capacity, restricted rooting depth, toxic substances such as salts and sodium, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

# Soil Properties

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Data relating to soil properties are collected during the course of the soil survey. The data and the estimates of soil and water features, listed in tables, are explained on the following pages.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine grain-size distribution, plasticity, and compaction characteristics.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help to characterize key soils.

The estimates of soil properties shown in the tables include the range of grain-size distribution and Atterberg limits, the engineering classification, and the physical and chemical properties of the major layers of each soil. Pertinent soil and water features also are given.

## Engineering Index Properties

Table 18 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

*Depth* to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under the heading "Soil Series and Their Morphology."

*Texture* is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages, by weight, of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and

less than 52 percent sand. If the content of particles coarser than sand is as much as 15 percent, by volume, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the Glossary.

*Classification* of the soils is determined according to the Unified soil classification system (2) and the system adopted by the American Association of State Highway and Transportation Officials (1).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, SP-SM.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse-grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine-grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20, or higher, for the poorest.

*Rock fragments* 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

*Percentage (of soil particles) passing designated sieves* is the percentage of the soil fraction less than 3

inches in diameter based on an oven-dry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

*Liquid limit and plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

The estimates of grain-size distribution, liquid limit, and plasticity index are generally rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is omitted in the table.

## Physical and Chemical Properties

Table 19 shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

*Clay* as a soil separate, or component, consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each major soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The amount and kind of clay greatly affect the fertility and physical condition of the soil. They determine the ability of the soil to adsorb cations and to retain moisture. They influence the shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

*Moist bulk density* is the weight of soil (oven-dry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at  $\frac{1}{3}$ -bar moisture tension. Weight is determined after drying the soil at 105 degrees C. In this table, the estimated moist bulk density of each major soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. A bulk density of more than 1.6 can restrict water storage and root penetration. Moist bulk density

is influenced by texture, kind of clay, content of organic matter, and soil structure.

*Permeability* refers to the ability of a soil to transmit water or air. The estimates indicate the rate of movement of water through the soil when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

*Available water capacity* refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage in each major soil layer is stated in inches of water per inch of soil. The capacity varies, depending on soil properties that affect the retention of water and the depth of the root zone. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time. It is the difference between the amount of soil water at field moisture capacity and the amount at wilting point.

*Soil reaction* is a measure of acidity or alkalinity and is expressed as a range in pH values. The range in pH of each major horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

*Shrink-swell potential* is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The classes are *low*, a change of less than 3 percent;

*moderate*, 3 to 6 percent; *high*, more than 6 percent; and *very high*, more than 9 percent.

*Erosion factor K* indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average annual rate of soil loss by sheet and rill erosion. Losses are expressed in tons per acre per year. These estimates are based primarily on percentage of silt, sand, and organic matter (up to 4 percent) and on soil structure and permeability. Values of K range from 0.02 to 0.64. The higher the value, the more susceptible the soil is to sheet and rill erosion by water.

*Erosion factor T* is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur over a sustained period without affecting crop productivity. The rate is expressed in tons per acre per year.

*Wind erodibility groups* are made up of soils that have similar properties affecting their resistance to soil blowing in cultivated areas. The groups indicate the susceptibility to soil blowing. The soils assigned to group 1 are the most susceptible to soil blowing, and those assigned to group 8 are the least susceptible. The groups are as follows:

1. Coarse sands, sands, fine sands, and very fine sands.
2. Loamy coarse sands, loamy sands, loamy fine sands, loamy very fine sands, and sapric soil material.
3. Coarse sandy loams, sandy loams, fine sandy loams, and very fine sandy loams.
- 4L. Calcareous loams, silt loams, clay loams, and silty clay loams.
4. Clays, silty clays, noncalcareous clay loams, and silty clay loams that are more than 35 percent clay.
5. Noncalcareous loams and silt loams that are less than 20 percent clay and sandy clay loams, sandy clays, and hemic soil material.
6. Noncalcareous loams and silt loams that are more than 20 percent clay and noncalcareous clay loams that are less than 35 percent clay.
7. Silts, noncalcareous silty clay loams that are less than 35 percent clay, and fibric soil material.
8. Soils that are not subject to soil blowing because of coarse fragments on the surface or because of surface wetness.

*Organic matter* is the plant and animal residue in the soil at various stages of decomposition. In table 19, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be

maintained or increased by returning crop residue to the soil. Organic matter affects the available water capacity, infiltration rate, and tilth. It is a source of nitrogen and other nutrients for crops.

## Soil and Water Features

Table 20 gives estimates of various soil and water features. The estimates are used in land use planning that involves engineering considerations.

*Hydrologic soil groups* are used to estimate runoff from precipitation. Soils are assigned to one of four groups. They are grouped according to the infiltration of water when the soils are thoroughly wet and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep or very deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep to very deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a permanent high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to two hydrologic groups in table 20, the first letter is for drained areas and the second is for undrained areas.

*Flooding*, the temporary covering of the soil surface by flowing water, is caused by overflowing streams, by runoff from adjacent slopes, or by inflow from high tides. Shallow water standing or flowing for short periods after rainfall or snowmelt is not considered flooding. Standing water in swamps and marshes or in a closed depression is considered ponding.

Table 20 gives the frequency and duration of flooding and the time of year when flooding is most likely to occur.

Frequency, duration, and probable dates of occurrence are estimated. Frequency generally is expressed as none, rare, occasional, or frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs, on the average, once or less in 2 years (the chance of flooding is 5 to 50 percent in any year); and *frequent* that it occurs, on the average, more than once in 2 years (the chance of flooding is more than 50 percent in any year). Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long* if 7 days to 1 month, and *very long* if more than 1 month. Probable dates are expressed in months. About two-thirds to three-fourths of all flooding occurs during the stated period.

The information on flooding is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered is local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

*High water table* (seasonal) is the highest level of a saturated zone in the soil in most years. The estimates are based mainly on the evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. Indicated in table 20 are the depth to the high water table; the kind of water table—that is, *perched* or *apparent*; and the months of the year that the water table commonly is high. A water table that is seasonally high for less than 1 month is not indicated in table 20.

An *apparent* water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. A *perched* water table is water standing above an unsaturated zone.

Two numbers in the column showing depth to the high water table indicate the normal range in depth to a saturated zone. Depth is given to the nearest half foot. The first numeral in the range indicates the highest water level. A plus sign preceding the range in depth indicates that the water table is above the surface of the soil. "More than 6.0" indicates that the

water table is below a depth of 6 feet or that it is within a depth of 6 feet for less than a month.

*Depth to bedrock* is given if bedrock is within a depth of 5 feet. The depth is based on many soil borings and on observations during soil mapping. The rock is specified as either soft or hard. If the rock is soft or fractured, excavations can be made with trenching machines, backhoes, or small rippers. If the rock is hard or massive, blasting or special equipment generally is needed for excavation.

*Potential frost action* is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, content of organic matter, and depth to the high water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured, clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage to pavements and other rigid structures.

*Risk of corrosion* pertains to potential soil-induced electrochemical or chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than steel in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low*, *moderate*, or *high*, is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion is also expressed as *low*, *moderate*, or *high*. It is based on soil texture, acidity, and the amount of sulfates in the saturation extract.

# Classification of the Soils

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The system of soil classification used by the National Cooperative Soil Survey has six categories (4). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or on laboratory measurements. Table 21 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

**ORDER.** Eleven soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Ultisol.

**SUBORDER.** Each order is divided into suborders, primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Udult (*Ud*, meaning humid climate, plus *ult*, from Ultisol).

**GREAT GROUP.** Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Hapludults (*Hapl*, meaning minimal horizon development, plus *udult*, the suborder of the Ultisols that occurs in humid climates).

**SUBGROUP.** Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other known kind of soil. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Hapludults.

**FAMILY.** Families are established within a subgroup

on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineral content, temperature regime, depth of the root zone, consistence, moisture equivalent, slope, and permanent cracks. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is clayey, mixed, mesic Typic Hapludults.

**SERIES.** The series consists of soils that have similar horizons in their profile. The horizons are similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. There can be some variation in the texture of the surface layer or of the substratum within a series.

## Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. Characteristics of the soil and the material in which it formed are identified for each series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The location of the typical pedon is described. The detailed description of each soil horizon follows standards in the "Soil Survey Manual" (5). Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" (4). Unless otherwise stated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

The map units of each soil series are described in the section "Detailed Soil Map Units."

### Arcola Series

*Depth class:* Moderately deep

*Drainage class:* Well drained

*Permeability:* Moderate

*Physiographic province:* Piedmont

*Landform:* Uplands

*Parent material:* Triassic and Jurassic interbedded sandstone, siltstone, and conglomerate residuum  
*Slope range:* 15 to 50 percent

### Associated Soils

- The clayey Buffstat, Littlejoe, and Warminster soils on uplands

### Typical Pedon

Arcola gravelly silt loam, 25 to 50 percent slopes; 1.7 miles southwest (226 degrees) from the intersection of Highways VA-644 and VA-626, about 1.9 miles northeast (45 degrees) of the intersection of Highways VA-604 and VA-626, in woodland:

- Ap—0 to 6 inches; dark reddish brown (5YR 4/3) gravelly silt loam; weak fine and medium granular structure; friable, slightly sticky, slightly plastic; many fine, medium, and coarse roots; 25 percent gravel; strongly acid; clear smooth boundary.
- Bt1—6 to 16 inches; reddish brown (5YR 4/4) silty clay loam; moderate fine and medium subangular blocky structure; friable, slightly sticky, slightly plastic; many fine, medium, and coarse roots; many distinct clay films on faces of peds; 10 percent gravel; strongly acid; clear smooth boundary.
- Bt2—16 to 27 inches; reddish brown (2.5YR 4/4) gravelly silty clay loam; moderate fine and medium subangular blocky structure; friable, slightly sticky, slightly plastic; common distinct clay films on faces of peds; 20 percent gravel; strongly acid; clear wavy boundary.
- Bt3—27 to 34 inches; reddish brown (2.5YR 4/4) gravelly silty clay loam; weak fine and medium subangular blocky structure; firm, slightly sticky, slightly plastic; 30 percent gravel; strongly acid; abrupt smooth boundary.
- Cr—34 to 58 inches; variegated dusty red (10YR 3/3) and dark reddish brown (2.5YR 3/3), slightly weathered soft bedrock that crushes to extremely gravelly silt loam; clear smooth boundary.
- R—58 inches; hard conglomerate bedrock.

### Range in Characteristics

*Thickness of the solum:* 18 to 36 inches  
*Depth to hard bedrock:* 40 to 60 inches  
*Depth to soft bedrock:* 20 to 40 inches  
*Rock fragments:* 15 to 30 percent in the A, Ap, and E horizons; 10 to 30 percent in the Bt horizon; 35 to 75 percent in the C horizon  
*Reaction:* Very strongly acid or strongly acid throughout the profile in unlimed areas

### Ap horizon:

Hue—10R to 7.5YR  
 Value—4  
 Chroma—2 to 4  
 Texture—silt loam in the fine-earth fraction

### A horizon (if it occurs):

Hue—10R to 7.5YR  
 Value—4  
 Chroma—2 to 4  
 Texture—silt loam in the fine-earth fraction

### E horizon (if it occurs):

Hue—10R to 5YR  
 Value—3 to 5  
 Chroma—3 or 4  
 Texture—loam or silt loam in the fine-earth fraction

### Bt horizon:

Hue—10R to 5YR  
 Value—3 or 4  
 Chroma—3 or 4  
 Texture—silt loam or silty clay loam in the fine-earth fraction

### C horizon (if it occurs):

Hue—10R or 2.5YR  
 Value—3 or 4  
 Chroma—3 or 4  
 Texture—loam or silt loam in the fine-earth fraction

### Cr horizon:

Hue—10R or 2.5YR  
 Value—3 or 4  
 Chroma—3 or 4  
 Texture—bedrock that crushes to loam or silt loam in the fine-earth fraction

## Batteau Series

*Depth class:* Very deep  
*Drainage class:* Moderately well drained  
*Permeability:* Moderate  
*Physiographic province:* Piedmont  
*Landform:* Flood plains  
*Parent material:* Recent alluvium  
*Slope range:* 0 to 2 percent

### Associated Soils

- The well drained Galtsmill and Wingina soils and the poorly drained Hatboro and Yogaville soils

### Typical Pedon

Batteau loam, 0 to 2 percent slopes, occasionally flooded; 1.5 miles east (110 degrees) of the junction of

Highways VA-626 and VA-647, and 1.8 miles west (268 degrees) of the junction of Highways VA-56 and VA-647, in pasture:

Ap—0 to 13 inches; dark brown (10YR 3/3) loam, dark yellowish brown (10YR 4/4) dry; weak fine granular structure; friable, slightly sticky, slightly plastic; common fine and medium roots; common fine discontinuous pores; few fine flakes of mica; neutral; clear smooth boundary.

Bw1—13 to 18 inches; dark yellowish brown (10YR 4/4) loam; weak fine subangular blocky structure; friable, slightly sticky, slightly plastic; common fine roots; common fine discontinuous pores; few fine flakes of mica; common fine faint irregular yellowish brown (10YR 5/4) iron and manganese masses; neutral; clear smooth boundary.

Bw2—18 to 32 inches; dark yellowish brown (10YR 4/4) loam; weak medium subangular blocky structure; friable, slightly sticky, slightly plastic; common fine discontinuous pores; few fine flakes of mica; common medium distinct grayish brown (10YR 5/2) iron and manganese depletions and common medium faint irregular yellowish brown (10YR 5/6) iron and manganese masses; slightly acid; clear smooth boundary.

Bw3—32 to 48 inches; dark brown (10YR 4/3) loam; weak fine subangular blocky structure; friable, slightly sticky, slightly plastic; common fine and medium discontinuous pores; few fine flakes of mica; few fine faint dark grayish brown (10YR 4/2) iron and manganese depletions and common medium distinct irregular dark yellowish brown (10YR 4/6) iron and manganese masses; slightly acid; clear smooth boundary.

Bw4—48 to 62 inches; dark yellowish brown (10YR 4/4) and grayish brown (10YR 5/2) (redoximorphic depletion) loam; weak fine subangular blocky structure; friable, slightly sticky, slightly plastic; common fine and medium discontinuous pores; few fine flakes of mica; slightly acid.

#### Range in Characteristics

*Thickness of the solum:* 30 to 60 inches

*Depth to bedrock:* 60 inches or more

*Rock fragments:* 0 to 15 percent in the A, Ap, and Bw horizons

*Reaction:* Moderately acid to neutral

*Ap horizon:*

Hue—7.5YR or 10YR

Value—3 to 5

Chroma—2 to 4

Texture—loam

*A horizon (if it occurs):*

Value—3 to 5

Chroma—2 to 4

Texture—loam

*Bw horizon:*

Hue—7.5YR to 2.5Y

Value—3 to 7

Chroma—3 to 6

Texture—sandy loam, fine sandy loam, loam, silt loam, sandy clay loam, clay loam, or silty clay loam

*C horizon:*

Hue—7.5YR to 2.5Y

Value—4 to 7

Chroma—3 to 8

Texture—sand, loamy sand, sandy loam, fine sandy loam, loam, or clay loam; stratified in some pedons

### Belvoir Series

*Depth class:* Very deep

*Drainage class:* Somewhat poorly drained

*Permeability:* Slow

*Physiographic province:* Piedmont

*Landform:* Uplands

*Parent material:* Colluvium

*Slope range:* 2 to 7 percent

#### Associated Soils

- The poorly drained Chatuge soils on adjacent stream terraces, the moderately well drained Delanco soils, and the well drained Thurmont soils

#### Typical Pedon

Belvoir sandy loam, 2 to 7 percent slopes; 0.8 mile east (102 degrees) of the intersection of Highways US-29 and VA-651, about 1.2 miles east-northeast (65 degrees) of the intersection of Highways US-29 and VA-811, in woodland:

Ap—0 to 4 inches; dark yellowish brown (10YR 4/4)

sandy loam; weak fine granular structure; friable; common very fine and fine roots; 2 percent gravel; very strongly acid; clear smooth boundary.

Bt1—4 to 12 inches; yellowish brown (10YR 5/6)

sandy clay loam; weak fine and medium subangular blocky structure; friable, slightly sticky, slightly plastic; few very fine and fine roots; few distinct clay films on faces of peds; few fine distinct pale brown (10YR 6/2) iron and manganese depletions; strongly acid; clear smooth boundary.

Bt2—12 to 25 inches; yellowish brown (10YR 5/6) sandy clay loam; weak fine and medium subangular blocky structure; friable, slightly sticky, slightly plastic; few very fine roots; few distinct clay films on faces of peds; common medium distinct grayish brown (10YR 5/2) iron and manganese depletions; strongly acid; clear wavy boundary.

Btx—25 to 40 inches; yellowish brown (10YR 5/6) sandy clay loam; weak coarse platy structure parting to weak medium subangular blocky; firm, brittle; few distinct clay films on faces of peds; many medium distinct irregular strong brown (7.5YR 5/8) iron and manganese masses and many medium distinct light gray (10YR 7/2) iron and manganese depletions; strongly acid; clear smooth boundary.

C—40 to 63 inches; brownish yellow (10YR 6/6) clay; massive; firm, sticky, plastic; many medium distinct gray (10YR 6/1) iron and manganese depletions and many medium distinct irregular strong brown (7.5YR 5/8) iron and manganese masses; very strongly acid.

#### Range in Characteristics

*Thickness of the solum:* 30 to 60 inches

*Depth to bedrock:* 80 inches or more

*Depth to fragipan:* 16 to 30 inches

*Rock fragments:* 0 to 15 percent in the A, Ap, E, Bt, and Btx horizons; 0 to 30 percent in the C horizon

*Reaction:* Very strongly acid or strongly acid throughout the profile in unlimed areas

#### *Ap horizon:*

Hue—10YR

Value—4 to 6

Chroma—2 to 6

Texture—sandy loam

#### *A horizon (if it occurs):*

Hue—10YR

Value—4 to 6

Chroma—2 to 4

Texture—sandy loam

#### *E horizon (if it occurs):*

Hue—10YR or 2.5Y

Value—5 or 6

Chroma—2 to 6

Texture—sandy loam, loam, or silt loam

#### *Bt horizon:*

Hue—7.5YR or 10YR

Value—5 or 6

Chroma—4 to 8

Texture—loam, sandy clay loam, or clay loam

#### *Btx horizon:*

Hue—7.5YR or 10YR

Value—5 or 6

Chroma—4 to 8

Texture—fine sandy loam, loam, or sandy clay loam

#### *C horizon:*

Hue—7.5YR or 10YR

Value—4 to 7

Chroma—1 to 8

Texture—loam, sandy clay loam, clay loam, or clay in the fine-earth fraction

### **Buffstat Series**

*Depth class:* Deep

*Drainage class:* Well drained

*Permeability:* Moderate

*Physiographic province:* Piedmont

*Landform:* Uplands

*Parent material:* Sericite schist residuum

*Slope range:* 2 to 25 percent

#### Associated Soils

- Arcola soils that have a loamy subsoil, Bugley soils that are shallow to bedrock, Littlejoe soils that have a red subsoil, and Warminster soils that formed in sericite schist

#### Typical Pedon

Buffstat silt loam, 2 to 7 percent slopes; 0.8 mile northwest (294 degrees) of the intersection of Highways VA-626 and VA-56, about 1.4 miles south (160 degrees) of the intersection of Highways VA-56 and VA-646, in woodland:

Ap—0 to 4 inches; dark yellowish brown (10YR 4/4) silt loam; weak fine granular structure; friable, slightly sticky; many fine, medium, and coarse roots; 10 percent gravel; few fine flakes of mica; strongly acid; clear smooth boundary.

Bt1—4 to 8 inches; reddish yellow (7.5YR 6/6) channery silty clay loam; weak fine subangular blocky structure; friable, slightly sticky, slightly plastic; many fine, medium, and coarse roots; 20 percent gravel; common fine flakes of mica; many distinct clay films on faces of peds; strongly acid; clear smooth boundary.

Bt2—8 to 28 inches; strong brown (7.5YR 5/8) channery silty clay loam; moderate fine and medium subangular blocky structure; friable, slightly sticky, slightly plastic; common fine,

medium, and coarse roots; 20 percent channers; common fine flakes of mica; many distinct clay films on faces of peds; strongly acid; clear wavy boundary.

Bt3—28 to 42 inches; reddish yellow (7.5YR 6/8) channery clay; weak medium subangular blocky structure; firm, sticky, plastic; 30 percent channers; clay flows in vertical relict rock joints; many fine flakes of mica; strongly acid; abrupt smooth boundary.

Cr—42 to 58 inches; reddish brown (5YR 4/4) and brownish yellow (10YR 6/8), slightly weathered soft sericite schist bedrock that crushes to silt loam.

R—58 inches; hard sericite schist bedrock.

#### **Range in Characteristics**

*Thickness of the solum:* 25 to 50 inches

*Depth to soft bedrock:* 40 to 60 inches

*Depth to hard bedrock:* 40 to 60 inches or more

*Rock fragments:* 0 to 15 percent in the A, Ap, E, and Bt horizons; 0 to 50 percent in the C and Cr horizons

*Reaction:* Very strongly acid or strongly acid throughout the profile in unlimed areas

*Ap horizon:*

Hue—7.5YR or 10YR

Value—4 or 5

Chroma—2 to 6

Texture—silt loam in the fine-earth fraction

*A horizon (if it occurs):*

Hue—10YR

Value—2 to 4

Chroma—2 to 4

Texture—silt loam in the fine-earth fraction

*E horizon (if it occurs):*

Hue—7.5YR or 10YR

Value—4 or 5

Chroma—4 to 6

Texture—fine sandy loam, loam, or silt loam in the fine-earth fraction

*Bt horizon:*

Hue—5YR to 10YR

Value—4 to 6

Chroma—4 to 8

Texture—silty clay loam, clay loam, silty clay, or clay in the fine-earth fraction; average of more than 30 percent silt in the particle-size control section

*C horizon:*

Hue—10R to 10YR

Value—3 or 4

Chroma—4 to 6

Texture—loam, silt loam, clay loam, or silty clay loam in the fine-earth fraction

*Cr horizon:*

Hue—2.5YR to 10YR

Value—3 to 6

Chroma—2 to 8

Texture—weathered schist that crushes to silt loam or silty clay loam in the fine-earth fraction

### **Bugley Series**

*Depth class:* Shallow

*Drainage class:* Somewhat excessively drained

*Permeability:* Moderately rapid

*Physiographic province:* Piedmont

*Landform:* Uplands

*Parent material:* Sericite schist residuum

*Slope range:* 7 to 60 percent

#### **Associated Soils**

- The clayey, deep Buffstat and Littlejoe soils

#### **Typical Pedon**

Bugley channery silt loam, 7 to 15 percent slopes; 0.4 mile east (88 degrees) of the intersection of Highways VA-56 and VA-646, about 1.5 miles southeast (126 degrees) of the intersection of Highways VA-56 and VA-722, in woodland:

Ap—0 to 3 inches; yellowish brown (10YR 5/4)

channery silt loam; weak fine granular structure; friable, slightly sticky, slightly plastic; many fine, medium, and coarse roots; 25 percent channers; common fine flakes of mica; extremely acid; clear smooth boundary.

Bw—3 to 13 inches; yellowish brown (10YR 5/6) very channery silt loam; weak fine subangular blocky structure; friable, slightly sticky, slightly plastic; many fine, medium, and coarse roots; 40 percent channers; common fine flakes of mica; extremely acid; clear wavy boundary.

Cr—13 to 18 inches; yellowish brown (10YR 5/8), slightly weathered soft sericite schist bedrock that crushes to extremely channery silt loam.

R—18 inches; hard sericite schist bedrock.

#### **Range in Characteristics**

*Thickness of the solum:* 10 to 20 inches

*Depth to bedrock:* 10 to 20 inches

*Rock fragments:* 15 to 35 percent in the A, Ap, and E horizons; 35 to 80 percent in the Bw, C, and Cr horizons

*Reaction:* Extremely acid to strongly acid throughout the profile in unlimed areas

*Ap horizon:*

Hue—7.5YR or 10YR

Value—4 to 6

Chroma—4 to 6

Texture—silt loam in the fine-earth fraction

*A horizon (if it occurs):*

Hue—10YR or 2.5Y

Value—3 or 4

Chroma—2 to 4

Texture—silt loam in the fine-earth fraction

*E horizon (if it occurs):*

Hue—7.5YR or 10YR

Value—4 to 6

Chroma—3 to 6

Texture—loam or silt loam in the fine-earth fraction

*Bw horizon:*

Hue—5YR to 10YR

Value—4 to 6

Chroma—4 to 8

Texture—silt loam, clay loam, or silty clay loam in the fine-earth fraction

*C horizon (if it occurs):*

Hue—5YR to 10YR

Value—4 to 6

Chroma—4 to 8

Texture—loam, silt loam, clay loam, or silty clay loam in the fine-earth fraction

*Cr horizon:*

Hue—5YR to 10YR

Value—4 to 6

Chroma—4 to 8

Texture—slightly weathered sericite schist that crushes to loam, silt loam, clay loam, or silty clay loam in the fine-earth fraction

## **Catoctin Series**

*Depth class:* Moderately deep

*Drainage class:* Well drained

*Permeability:* Moderately rapid

*Physiographic province:* Blue Ridge

*Landform:* Mountain ridges

*Parent material:* Greenstone residuum

*Slope range:* 7 to 75 percent

### **Associated Soils**

- The very deep Lew soils and the deep Myersville soils

### **Typical Pedon**

Catoctin channery silt loam in an area of Myersville-Catoctin complex, 35 to 55 percent slopes, extremely stony; 1.0 mile north (352 degrees) of the intersection of Highways VA-151 and VA-631, about 0.7 mile east (90 degrees) of the intersection of Highways US-250 and VA-151, in woodland:

A—0 to 5 inches; dark brown (10YR 3/3) channery silt loam; weak fine granular structure; very friable, slightly sticky, slightly plastic; many very fine and fine roots; 30 percent channers; moderately acid; clear wavy boundary.

Bw—5 to 28 inches; strong brown (7.5YR 5/6) channery silt loam; thin lenses and irregularly shaped areas of yellowish brown (10YR 5/6) channery silty clay loam; weak very fine subangular blocky structure; friable, slightly sticky, slightly plastic; few distinct clay films on faces of peds; common very fine and fine roots; 30 percent channers; moderately acid; abrupt wavy boundary.

C—28 to 36 inches; yellowish brown (10YR 5/6) extremely channery silt loam saprolite; massive; friable, slightly sticky, slightly plastic; few very fine roots; 70 percent channers; slightly acid; clear wavy boundary.

R—36 inches; hard greenstone bedrock.

### **Range in Characteristics**

*Thickness of the solum:* 15 to 30 inches

*Depth to bedrock:* 20 to 40 inches

*Rock fragments:* 15 to 35 percent in the A and E horizons; 15 to 55 percent in the Bw horizon; 35 to 80 percent in the C horizon

*Surface stoniness:* 0 to 15 percent

*Reaction:* Strongly acid to slightly acid in the A, E, and Bw horizons in unlimed areas; moderately acid to neutral in the C horizon

*A horizon:*

Hue—7.5YR or 10YR

Value—3 to 5

Chroma—2 to 4

Texture—silt loam in the fine-earth fraction

*E horizon (if it occurs):*

Hue—7.5YR or 10YR

Value—4 or 5

Chroma—3 to 8

Texture—loam or silt loam in the fine-earth fraction

*Bw horizon:*

Hue—5YR to 2.5Y

Value—4 to 6

Chroma—4 to 8

Texture—loam or silt loam that has pockets of clay loam or silty clay loam in the fine-earth fraction

*C horizon:*

Hue—5YR to 2.5YR

Value—4 to 6

Chroma—4 to 8

Texture—loam or silt loam in the fine-earth fraction

## **Chatuge Series**

*Depth class:* Very deep

*Drainage class:* Poorly drained

*Permeability:* Moderate

*Physiographic province:* Piedmont foothills of the Blue Ridge Mountains

*Landform:* Stream terraces and fans

*Parent material:* Alluvium

*Slope range:* 1 to 4 percent

### **Associated Soils**

- The somewhat poorly drained Belvoir soils and the well drained Delanco soils

### **Typical Pedon**

Chatuge loam, 1 to 4 percent slopes; 0.3 mile south-southwest (212 degrees) of the intersection of Highways VA-653 and VA-668, about 0.5 mile southeast (150 degrees) of the intersection of Highways US-29 and VA-653, in woodland:

A—0 to 9 inches; dark brown (10YR 3/3) loam; weak fine granular structure; friable; many very fine, fine, and medium roots; 4 percent gravel; few fine flakes of mica; very strongly acid; abrupt smooth boundary.

Btg1—9 to 19 inches; gray (10YR 6/1) sandy clay loam; weak medium subangular blocky structure; friable; common very fine and fine roots; few distinct clay films on faces of peds; 4 percent gravel; few fine flakes of mica; common fine and medium distinct irregular reddish yellow (7.5YR 6/8) iron and manganese masses; very strongly acid; clear smooth boundary.

Btg2—19 to 41 inches; gray (10YR 6/1) clay loam; moderate fine and medium subangular blocky structure; friable, slightly sticky, slightly plastic; common very fine and fine roots; few distinct clay films on faces of peds; 5 percent gravel; common fine and medium distinct irregular strong brown (7.5YR 5/8) iron and manganese masses; strongly acid; clear wavy boundary.

Cg—41 to 62 inches; gray (N 6/0) sandy loam; massive; friable; few very fine and fine roots; 10

percent gravel; common fine flakes of mica; strongly acid.

### **Range in Characteristics**

*Thickness of the solum:* 40 to 60 inches

*Depth to bedrock:* 60 inches or more

*Rock fragments:* 0 to 5 percent in the A and Ap horizons; 0 to 15 percent in the Btg horizon; 10 to 50 percent in the C horizon

*Reaction:* Very strongly acid to moderately acid throughout the profile in unlimed areas

*Ap horizon (if it occurs):*

Hue—10YR

Value—3 to 5

Chroma—1 to 4

Texture—loam

*A horizon:*

Hue—10YR

Value—3 to 5

Chroma—1 to 4

Texture—loam

*Btg horizon:*

Hue—horizon has hue of 10YR or 2.5Y or is neutral in hue

Value—4 to 6

Chroma—1 or 2

Texture—loam, sandy clay loam, silty clay loam, or clay loam

*Cg horizon:*

Hue—horizon has hue of 10YR or 2.5Y or is neutral in hue

Value—4 to 6

Chroma—0 to 2

Texture—coarse sand, loamy sand, sandy loam, loam, or sandy clay loam in the fine-earth fraction

## **Codorus Series**

*Depth class:* Very deep

*Drainage class:* Somewhat poorly drained

*Permeability:* Moderate

*Physiographic province:* Piedmont

*Landform:* Flood plains

*Parent material:* Recent alluvium

*Slope range:* 0 to 2 percent

### **Associated Soils**

- The well drained Colvard and Craigs ville soils, the poorly drained Hatboro soils, and the moderately well drained Suches soils

### Typical Pedon

Codorus silt loam, 0 to 2 percent slopes, occasionally flooded; at Arrington, about 6,650 feet northeast (34 degrees) of the intersection of Highways VA-665 and VA-655, about 6,750 feet southeast (152 degrees) of the intersection of Highways VA-668 and VA-653, in woodland:

- A—0 to 3 inches; dark brown (10YR 4/3) silt loam; weak fine granular structure; friable; common fine, medium, and coarse roots; common fine flakes of mica; moderately acid; abrupt smooth boundary.
- Bw1—3 to 18 inches; dark brown (7.5YR 4/4) silt loam; weak medium subangular blocky structure; friable; common fine and medium roots; common fine flakes of mica; few fine and medium distinct yellowish red (5YR 5/8) iron and manganese masses; strongly acid; clear smooth boundary.
- Bw2—18 to 30 inches; brown (10YR 5/3) silty clay loam; weak medium subangular blocky structure; friable, slightly sticky, slightly plastic; common fine and medium roots; common fine flakes of mica; common medium distinct irregular strong brown (7.5YR 4/6) iron and manganese masses and common medium faint grayish brown (10YR 5/2) iron and manganese depletions; moderately acid; clear smooth boundary.
- Bw3—30 to 50 inches; brown (10YR 4/3) silty clay loam; weak coarse subangular blocky structure; friable, slightly sticky, slightly plastic; common fine and medium roots; common fine flakes of mica; common medium and coarse irregular distinct strong brown (7.5YR 4/6) iron and manganese masses and common medium and coarse distinct dark gray (10YR 4/1) iron and manganese depletions; moderately acid; clear wavy boundary.
- C—50 to 72 inches; dark grayish brown (10YR 4/2) stratified loamy sand and gravel; single grain; very friable; few fine roots; few fine flakes of mica; moderately acid.

### Range in Characteristics

*Thickness of the solum:* 30 to 60 inches

*Depth to bedrock:* 60 inches or more

*Rock fragments:* 0 to 15 percent in the A, Ap, and Bw horizons; 0 to 25 percent in the C horizon above a depth of 40 inches; 0 to 70 percent in the C horizon below a depth of 40 inches

*Reaction:* In unlimed areas, very strongly acid to moderately acid in the Ap and A horizons and the upper part of the Bw horizon; strongly acid to slightly acid in the lower part of the Bw horizon and in the C horizon

### Ap horizon:

Hue—10YR

Value—4 to 6

Chroma—2 or 3

Texture—silt loam

### A horizon (if it occurs):

Hue—10YR

Value—3 to 6

Chroma—2 or 3

Texture—silt loam

### Bw horizon:

Hue—7.5YR or 10YR

Value—4 or 5

Chroma—3 or 4

Texture—loam, silt loam, or silty clay loam

### C horizon:

Hue—7.5YR to 2.5Y

Value—3 to 5

Chroma—2 to 4

Texture—loam, silt loam, or silty clay loam in the fine-earth fraction; stratified loamy sand, sand, and gravel below a depth of 40 inches

## Colleen Series

*Depth class:* Very deep

*Drainage class:* Well drained

*Permeability:* Slow

*Physiographic province:* Piedmont

*Landform:* Uplands

*Parent material:* Anorthosite residuum

*Slope range:* 2 to 25 percent

### Associated Soils

- The moderately well drained Sketerville soils and the poorly drained Pineywoods soils

### Typical Pedon

Colleen gravelly loam, 2 to 7 percent slopes; 0.6 mile southwest (231 degrees) of the intersection of Highways VA-672 and VA-655, about 1.1 miles east (100 degrees) of Highways VA-151 and VA-674, in pasture:

Ap—0 to 9 inches; 70 percent very dark yellowish brown (10YR 4/4) and 30 percent yellowish red (5YR 4/6) gravelly loam; friable; many fine roots; 30 percent blue quartz gravel; moderately acid; clear smooth boundary.

Bt1—9 to 29 inches; red (2.5YR 4/8) gravelly clay; moderate fine subangular blocky structure; firm, sticky, plastic; common fine roots; many distinct

- clay films on faces of peds; 25 percent blue quartz gravel; strongly acid; gradual smooth boundary.
- Bt2—29 to 50 inches; 60 percent red (2.5YR 4/8), 20 percent reddish yellow (7.5YR 7/8), and 20 percent white (N 8/0) gravelly clay; moderate fine and medium subangular blocky structure; firm, sticky, plastic; many distinct clay films on faces of peds; few fine flakes of mica; 25 percent blue quartz gravel; strongly acid; clear smooth boundary.
- C—50 to 72 inches; red (2.5YR 5/8), reddish yellow (5YR 6/8), and white (N 8/0) gravelly clay loam saprolite; massive; friable, slightly sticky, slightly plastic; common clay flows; few fine flakes of mica; 25 percent blue quartz gravel; strongly acid.

### Range in Characteristics

*Thickness of the solum:* 40 to 60 inches or more

*Depth to bedrock:* 60 inches or more

*Rock fragments:* 15 to 35 percent throughout the profile

*Reaction:* Very strongly acid to slightly acid in the A and Ap horizons in unlimed areas; extremely acid to strongly acid in the Bt horizon; very strongly acid to moderately acid in the C horizon

#### Ap horizon:

Hue—7.5YR or 10YR

Value—4 or 5

Chroma—3 to 6

Texture—loam in the fine-earth fraction

#### A horizon (if it occurs):

Hue—7.5YR or 10YR

Value—2 or 3

Chroma—2 to 4

Texture—loam in the fine-earth fraction

#### E horizon (if it occurs):

Hue—7.5YR or 10YR

Value—5 to 8

Chroma—4 to 8

Texture—fine sandy loam, loam, or silt loam in the fine-earth fraction

#### Bt horizon:

Hue—2.5YR to 7.5YR

Value—4 to 6

Chroma—6 to 8

Texture—clay loam, silty clay loam, or clay in the fine-earth fraction

#### C horizon:

Hue—horizon has hue of 2.5YR to 5Y or is neutral in hue

Value—4 to 6

Chroma—0 to 8

Texture—sandy loam, loam, silt loam, clay loam, or silty clay loam in the fine-earth fraction

### Colvard Series

*Depth class:* Very deep

*Drainage class:* Well drained

*Permeability:* Moderately rapid

*Physiographic province:* Piedmont

*Landform:* Flood plains

*Parent material:* Recent alluvium

*Slope range:* 0 to 2 percent

### Associated Soils

- The somewhat poorly drained Codorus soils, the poorly drained Hatboro soils, and the moderately well drained Suches soils

### Typical Pedon

Colvard fine sandy loam, 0 to 2 percent slopes, occasionally flooded: 1,600 feet southeast (145 degrees) of the intersection of Highways VA-633 and VA-635, about 6,700 feet east (73 degrees) of the intersection of Highways VA-1516 and VA-635, in hayland:

Ap—0 to 5 inches; dark brown (7.5YR 3/4) fine sandy loam; weak fine granular structure; very friable; many fine and medium roots; few fine flakes of mica; strongly acid; abrupt smooth boundary.

C1—5 to 12 inches; dark yellowish brown (10YR 4/6) fine sandy loam; single grain; very friable; many fine and medium roots; common fine flakes of mica; strongly acid; abrupt smooth boundary.

C2—12 to 32 inches; strong brown (7.5YR 5/6) fine sandy loam; single grain; very friable; common fine and medium roots; common fine flakes of mica; few fine faint dark brown (7.5YR 4/4) manganese masses; strongly acid; clear smooth boundary.

C3—32 to 50 inches; strong brown (7.5YR 5/6) fine sandy loam; single grain; very friable; common fine and medium roots; common fine flakes of mica; few fine faint strong brown (7.5YR 4/6) manganese masses; strongly acid; abrupt smooth boundary.

Ab—50 to 56 inches; dark grayish brown (10YR 4/2) loam; massive; friable, slightly sticky; common fine and medium roots; common fine flakes of mica; strongly acid; abrupt smooth boundary.

C'—56 to 62 inches; strong brown (7.5YR 4/6) loamy c

sand; single grain; very friable; few fine and medium roots; common fine flakes of mica; strongly acid.

#### Range in Characteristics

*Thickness of loamy sediments:* 40 to 60 inches

*Depth to bedrock:* 60 inches or more

*Rock fragments:* 0 to 15 percent throughout the profile

*Reaction:* Strongly acid to mildly alkaline throughout the profile in unlimed areas

*A or Ab horizon:*

Hue—7.5YR or 10YR

Value—3 or 4

Chroma—2 to 4

Texture—fine sandy loam

*C horizon:*

Hue—7.5YR or 10YR

Value—4 to 6

Chroma—3 to 6

Texture—sandy loam, fine sandy loam, or loam or thin strata of loamy sand or sand; stratified sand, loamy sand, sandy loam, fine sandy loam, and loam below a depth of 40 inches in some pedons

### Craigsville Series

*Depth class:* Very deep

*Drainage class:* Well drained

*Permeability:* Moderately rapid and rapid

*Physiographic province:* Blue Ridge and Piedmont

*Landform:* Flood plains

*Parent material:* Recent alluvium

*Slope range:* 0 to 2 percent

#### Associated Soils

- The somewhat poorly drained Codorus soils, the poorly drained Hatboro soils, the moderately well drained Suches soils, and Lew soils that are not subject to flooding

#### Typical Pedon

Craigsville very cobbly loam, 0 to 2 percent slopes, frequently flooded; 0.2 mile southeast (158 degrees) of the intersection of Highways VA-664 and VA-680, about 1.3 miles west (278 degrees) of the intersection of Highways VA-664 and VA-151, in pasture:

Ap—0 to 6 inches; dark brown (10YR 3/3) very cobbly loam; weak fine granular structure; friable; many fine, medium, and coarse roots; 45 percent

cobbles and gravel; very strongly acid; abrupt smooth boundary.

Bw—6 to 21 inches; strong brown (7.5YR 5/6) extremely cobbly sandy loam; weak fine granular structure; friable; common fine and medium roots; 65 percent cobbles and gravel; very strongly acid; clear smooth boundary.

C1—21 to 50 inches; yellowish brown (10YR 5/6) extremely cobbly loamy sand; single grain; loose; few fine roots; 70 percent cobbles and gravel; strongly acid; clear smooth boundary.

C2—50 to 64 inches; dark yellowish brown (10YR 4/6) extremely gravelly loamy sand; single grain; loose; 70 percent gravel and cobbles; strongly acid.

#### Range in Characteristics

*Thickness of the solum:* 20 to 40 inches

*Depth to bedrock:* 60 inches or more

*Rock fragments:* 35 to 60 percent in the A and Ap horizons; 35 to 70 percent in the Bw, C, and 2C horizons

*Reaction:* Very strongly acid or strongly acid throughout the profile in unlimed areas

*Ap horizon:*

Hue—7.5YR or 10YR

Value—3 or 4

Chroma—2 to 4

Texture—loam in the fine-earth fraction

*A horizon (if it occurs):*

Hue—7.5YR or 10YR

Value—3

Chroma—2 or 3

Texture—loam in the fine-earth fraction

*Bw horizon:*

Hue—5YR to 10YR

Value—4 or 5

Chroma—4 to 6

Texture—sandy loam or loam in the fine-earth fraction

*C horizon:*

Hue—5YR to 10YR

Value—4 or 5

Chroma—3 to 6

Texture—loamy sand or sandy loam in the fine-earth fraction

*2C horizon (if it occurs):*

Hue—5YR to 10YR

Value—4 or 5

Chroma—3 to 6

Texture—loamy sand or sandy loam in the fine-earth fraction

## ***Delanco Series***

*Depth class:* Very deep

*Drainage class:* Moderately well drained

*Permeability:* Moderately slow

*Physiographic province:* Piedmont

*Landform:* Stream terraces and fans

*Parent material:* Alluvium

*Slope range:* 2 to 15 percent

### **Associated Soils**

- The somewhat poorly drained Belvoir soils, the poorly drained Chatuge soils, the well drained Elsinboro soils, and the moderately well drained Suches soils on flood plains subject to frequent flooding

### **Typical Pedon**

Delanco loam, 2 to 7 percent slopes; 0.5 mile southeast (140 degrees) of the intersection of Highways VA-626 and VA-647, about 1.3 miles east (80 degrees) of the intersection of Highways VA-626 and VA-655, in cropland:

Ap—0 to 5 inches; brown (10YR 5/3) loam; weak fine granular structure; friable, slightly sticky, slightly plastic; common fine and medium roots; 2 percent gravel; few fine flakes of mica; strongly acid; abrupt smooth boundary.

Bt1—5 to 18 inches; strong brown (7.5YR 5/6) clay loam; moderate fine and medium subangular blocky structure; friable, slightly sticky, slightly plastic; common fine and medium roots; 2 percent gravel; common distinct clay films on faces of peds; few fine flakes of mica; many fine and medium distinct brown (10YR 5/3) iron and manganese depletions and many fine and medium distinct irregular yellowish red (5YR 5/6) and light yellowish brown (10YR 6/4) iron and manganese masses; strongly acid; clear smooth boundary.

Bt2—18 to 31 inches; yellowish brown (10YR 5/6) clay loam; moderate fine and medium subangular blocky structure; friable, slightly sticky, slightly plastic; few fine and medium roots; 2 percent gravel; common distinct clay films on faces of peds; few fine flakes of mica; common medium distinct irregular strong brown (7.5YR 5/8) iron and manganese masses and common medium distinct light brownish gray (10YR 6/2) iron and manganese depletions; strongly acid; clear smooth boundary.

Bt3—31 to 45 inches; yellowish brown (10YR 5/8) clay loam; moderate fine subangular blocky structure;

friable, slightly sticky, slightly plastic; few medium and fine roots; 5 percent gravel; few distinct clay films on faces of peds; common fine flakes of mica; common medium distinct irregular strong brown (7.5YR 5/8) iron and manganese masses and common medium prominent light brownish gray (10YR 6/2) iron and manganese depletions; very strongly acid; clear smooth boundary.

C—45 to 65 inches; strong brown (7.5YR 5/6) loam; massive; friable, slightly sticky, slightly plastic; 5 percent gravel; many fine flakes of mica; common medium distinct irregular yellowish red (5YR 5/8) and light yellowish brown (10YR 6/4) iron and manganese masses and common medium prominent light brownish gray (10YR 6/2) iron and manganese depletions; very strongly acid.

### **Range in Characteristics**

*Thickness of the solum:* 26 to 46 inches

*Depth to bedrock:* 60 inches or more

*Rock fragments:* 0 to 5 percent in the A, Ap, E, and Bt horizons; 5 to 25 percent in the C horizon

*Reaction:* Extremely acid to strongly acid throughout the profile in unlimed areas

*Ap horizon:*

Hue—10YR or 2.5Y

Value—4 or 5

Chroma—2 to 4

Texture—loam

*A horizon (if it occurs):*

Hue—10YR or 2.5Y

Value—3 to 5

Chroma—1 to 4

Texture—loam

*E horizon (if it occurs):*

Hue—7.5YR or 10YR

Value—3 to 6

Chroma—2 to 4

Texture—fine sandy loam or silt loam

*Bt horizon:*

Hue—7.5YR or 10YR

Value—4 to 7

Chroma—6 to 8

Texture—loam, silt loam, sandy clay loam, clay loam, or silty clay loam

*C horizon:*

Hue—5YR to 10YR

Value—4 to 6

Chroma—1 to 6

Texture—sandy loam, loam, or silt loam in the fine-earth fraction

## Edneytown Series

*Depth class:* Very deep

*Drainage class:* Well drained

*Permeability:* Moderate

*Physiographic province:* Blue Ridge

*Landform:* Mountain ridges

*Parent material:* Gneiss, granite, and granodiorite residuum

*Slope range:* 7 to 75 percent

### Associated Soils

- The moderately deep Peaks and Occoquan soils and Saunook soils that have a dark surface layer

### Typical Pedon

Edneytown loam, 7 to 15 percent slopes; 2.4 miles northeast (56 degrees) from the intersection of Highways VA-699 and VA-680, about 2.2 miles north (340 degrees) from the intersection of Highways VA-151 and VA-623, in woodland:

Oi—2 inches to 0; undecomposed and partially decomposed leaves and twigs.

A—0 to 7 inches; very dark grayish brown (10YR 3/2) loam; weak fine granular structure; very friable, slightly sticky; many fine, medium, and coarse roots; 5 percent gravel; very strongly acid; abrupt smooth boundary.

Bt1—7 to 17 inches; strong brown (7.5YR 5/6) loam; moderate fine and medium subangular blocky structure; friable, slightly sticky, slightly plastic; many fine, medium, and coarse roots; few distinct clay films; 12 percent gravel; common fine flakes of mica; strongly acid; clear smooth boundary.

Bt2—17 to 34 inches; strong brown (7.5YR 5/6) loam; weak medium subangular blocky structure; friable, slightly sticky, slightly plastic; few fine roots; common distinct clay films; 10 percent gravel; common fine flakes of mica; strongly acid; clear smooth boundary.

C1—34 to 48 inches; strong brown (7.5YR 5/6) sandy loam saprolite; massive; friable; few fine roots; 12 percent gravel; many fine flakes of mica; many reddish yellow (7.5YR 6/6) lithochromic masses; strongly acid; clear wavy boundary.

C2—48 to 67 inches; yellowish brown (10YR 5/4) sandy loam saprolite; massive; few fine roots; 10 percent gravel; many fine flakes of mica; strongly acid.

### Range in Characteristics

*Thickness of the solum:* 20 to 40 inches

*Depth to bedrock:* 60 inches or more

*Rock fragments:* 0 to 15 percent throughout the profile

*Reaction:* Very strongly acid to moderately acid in the A and E horizons in unlimed areas; very strongly acid or strongly acid in the Bt and C horizons

#### A horizon:

Hue—10YR

Value—3 to 6

Chroma—1 to 4

Texture—loam

#### Ap horizon (if it occurs):

Hue—10YR

Value—4 to 6

Chroma—2 to 4

Texture—loam

#### E horizon (if it occurs):

Hue—10YR

Value—4 to 7

Chroma—3 to 6

Texture—loamy fine sand, sandy loam, fine sandy loam, or loam

#### Bt horizon:

Hue—7.5YR or 10YR

Value—5 to 7

Chroma—4 to 8

Texture—fine sandy loam, loam, sandy clay loam, or clay loam

#### C horizon:

Hue—7.5YR or 10YR

Value—5 to 8

Chroma—3 to 8

Texture—loamy sand, sandy loam, or fine sandy loam

#### Cr horizon (if it occurs):

Hue—7.5YR or 10YR

Value—5 to 8

Chroma—3 to 8

Texture—weathered gneiss, granite, or granodiorite that crushes to loamy sand or sandy loam

## Elioak Series

*Depth class:* Very deep

*Drainage class:* Well drained

*Permeability:* Moderate

*Physiographic province:* Piedmont

*Landform:* Uplands

*Parent material:* Phyllite and schist residuum

*Slope range:* 2 to 25 percent

### Associated Soils

- Glenelg soils that have less clay in the subsoil than the Elioak soils and the moderately deep Hazel soils

### Typical Pedon

Elioak loam, 2 to 7 percent slopes; 0.5 mile southwest (210 degrees) of the intersection of Highways VA-655 and VA-732, about 0.9 mile west (264 degrees) of the intersection of Highways VA-655 and VA-722, in woodland:

- A—0 to 3 inches; dark yellowish brown (10YR 4/4) loam; weak fine granular structure; friable, slightly sticky, slightly plastic; many fine, medium, and coarse roots; common fine flakes of mica; very strongly acid; abrupt smooth boundary.
- E—3 to 8 inches; brown (7.5YR 5/4) loam; weak fine granular structure; friable, slightly sticky, slightly plastic; many fine, medium, and coarse roots; 2 percent gravel; common fine flakes of mica; very strongly acid; clear smooth boundary.
- Bt1—8 to 26 inches; red (2.5YR 4/8) clay; moderate fine and medium subangular blocky structure; friable, sticky, plastic; common fine and medium roots; many fine flakes of mica; many distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.
- Bt2—26 to 40 inches; red (2.5YR 4/8) clay loam; weak fine and medium subangular blocky structure; friable, slightly sticky, slightly plastic; few fine, medium, and coarse roots; many fine flakes of mica; common distinct clay films on faces of peds; few medium distinct yellowish brown (10YR 5/8) lithochromic masses; strongly acid; gradual wavy boundary.
- C—40 to 60 inches; variegated strong brown (7.5YR 5/6) and red (2.5YR 4/6) loam saprolite; massive; friable; few fine and medium roots; many fine flakes of mica; strongly acid.

### Range in Characteristics

*Thickness of the solum:* 30 to 50 inches

*Depth to bedrock:* 60 inches or more

*Rock fragments:* 0 to 15 percent

*Reaction:* Very strongly acid to moderately acid throughout the profile in unlimed areas

*Ap horizon (if it occurs):*

Hue—5YR to 10YR

Value—4 or 5

Chroma—2 to 4

Texture—loam in the fine-earth fraction; clay loam in eroded areas

*A horizon:*

Hue—5YR to 10YR

Value—3 to 5

Chroma—2 to 4

Texture—loam in the fine-earth fraction

*E horizon:*

Hue—5YR to 10YR

Value—4 or 5

Chroma—3 or 4

Texture—fine sandy loam, loam, or silt loam in the fine-earth fraction

*Bt horizon:*

Hue—10R to 5YR

Value—3 to 5

Chroma—4 to 8

Texture—clay loam, silty clay loam, silty clay, or clay

*C horizon:*

Hue—2.5YR to 7.5YR

Value—4 to 6

Chroma—4 to 6

Texture—fine sandy loam, loam, or silt loam

### Elsinboro Series

*Depth class:* Very deep

*Drainage class:* Well drained

*Permeability:* Moderate

*Physiographic province:* Piedmont

*Landform:* Stream terraces

*Parent material:* Alluvium

*Slope range:* 2 to 7 percent

### Associated Soils

- The moderately well drained Delanco soils in areas at the head of drainageways

### Typical Pedon

Elsinboro loam, 2 to 7 percent slopes, rarely flooded; 3.0 miles east (86 degrees) of the intersection of Highways VA-626 and VA-604, about 2.1 miles south (174 degrees) of the intersection of Highways VA-626 and VA-644, in cropland:

- Ap—0 to 11 inches; dark yellowish brown (10YR 4/4) loam; weak fine granular structure; friable; common fine roots; common fine flakes of mica; strongly acid; abrupt smooth boundary.
- Bt—11 to 38 inches; strong brown (7.5YR 5/6) clay loam; moderate fine and medium subangular blocky structure; friable, slightly sticky, slightly

plastic; few fine roots; few distinct clay films on faces of peds; few fine flakes of mica; strongly acid; gradual smooth boundary.

C1—38 to 55 inches; strong brown (7.5YR 5/6) sandy clay loam; massive; friable, slightly plastic; few fine roots; common fine flakes of mica; very strongly acid; gradual smooth boundary.

C2—55 to 72 inches; strong brown (7.5YR 5/6) sandy clay loam; massive; friable, slightly plastic; few fine roots; common fine flakes of mica; few fine faint brown (10YR 5/3) iron and manganese depletions; very strongly acid.

### Range in Characteristics

*Thickness of the solum:* 28 to 50 inches

*Depth to bedrock:* 60 inches or more

*Rock fragments:* 0 to 15 percent throughout the profile

*Reaction:* Very strongly acid or strongly acid throughout the profile in unlimed areas

#### *Ap horizon:*

Hue—7.5YR or 10YR

Value—3 or 4

Chroma—3 or 4

Texture—loam in the fine-earth fraction

#### *A horizon (if it occurs):*

Hue—7.5YR or 10YR

Value—3 or 4

Chroma—2 or 3

Texture—loam in the fine-earth fraction

#### *E horizon (if it occurs):*

Hue—7.5YR or 10YR

Value—3 to 5

Chroma—2 to 4

Texture—sandy loam, fine sandy loam, loam, or silt loam in the fine-earth fraction

#### *Bt horizon (upper part):*

Hue—7.5YR or 10YR

Value—4 or 5

Chroma—4 to 8

Texture—loam, silt loam, silty clay loam, or clay loam in the fine-earth fraction

#### *Bt horizon (lower part):*

Hue—2.5YR to 7.5YR

Value—4 or 5

Chroma—4 to 8

Texture—loam, silt loam, silty clay loam, or clay loam in the fine-earth fraction

#### *C horizon:*

Hue—2.5YR to 7.5YR

Value—4 to 6

Chroma—4 to 8

Texture—stratified sandy loam, fine sandy loam, loam, silt loam, or sandy clay loam in the fine-earth fraction

## **Fauquier Series**

*Depth class:* Deep

*Drainage class:* Well drained

*Permeability:* Moderate

*Physiographic province:* Piedmont and Blue Ridge

*Landform:* Uplands

*Parent material:* Greenstone, gabbro, and diorite residuum

*Slope range:* 7 to 50 percent

### Associated Soils

- The moderately deep Spriggs soils and the very deep Minnieville soils

### Typical Pedon

Fauquier loam, 7 to 15 percent slopes, very stony; 1.0 mile west (260 degrees) from the intersection of Highways VA-640 and VA-641, about 1.1 miles northwest (316 degrees) of the intersection of Highways VA-639 and VA-719, in woodland:

Oi—1 inch to 0; undecomposed and partially decomposed leaves and twigs.

A—0 to 6 inches; brown (7.5YR 4/4) loam; moderate fine granular structure; friable, slightly sticky; many fine and medium roots; 10 percent gravel; moderately acid; clear smooth boundary.

Bt—6 to 40 inches; red (2.5YR 4/8) clay; moderate fine and medium subangular blocky structure; firm, sticky, plastic; common fine roots; many distinct clay films on faces of peds; 10 percent gravel; many medium distinct reddish yellow (7.5YR 6/8) lithochromic masses; moderately acid; clear smooth boundary.

Cr—40 to 50 inches; slightly weathered soft gabbro bedrock that crushes to reddish yellow (7.5YR 6/8) loam; common clay flows in relict rock joints; gradual smooth boundary.

R—50 inches; hard gabbro bedrock.

### Range in Characteristics

*Thickness of the solum:* 20 to 40 inches

*Depth to soft bedrock:* 40 inches or more

*Depth to hard bedrock:* 40 inches or more

*Rock fragments:* 0 to 15 percent in the A and E horizons and the upper part of the Bt horizon; 0 to 35 percent in the lower part of the Bt horizon; 0 to 60 percent in the C horizon

*Surface stoniness:* 0 to 3 percent

*Reaction:* Very strongly acid to moderately acid in the A, E and Bt horizons in unlimed areas; strongly acid to moderately acid in the C horizon

*Ap horizon (if it occurs):*

Hue—2.5YR to 7.5YR

Value—4

Chroma—4 to 6

Texture—loam in the fine-earth fraction

*A horizon:*

Hue—2.5YR to 7.5YR

Value—3 or 4

Chroma—4 to 6

Texture—loam in the fine-earth fraction

*Bt horizon:*

Hue—10R to 2.5YR; 5YR in individual subhorizons in some pedons

Value—3 or 4

Chroma—4 to 8

Texture—silty clay loam, silty clay, or clay in the fine-earth fraction

*C horizon (if it occurs):*

Hue—10R to 10YR

Value—3 to 8

Chroma—4 to 8

Texture—silt loam in the fine-earth fraction

*Cr horizon:*

Hue—10R to 10YR

Value—3 to 8

Chroma—4 to 8

Texture—slightly weathered greenstone that crushes to silt loam in the fine-earth fraction

## **Galtsmill Series**

*Depth class:* Very deep

*Drainage class:* Well drained

*Permeability:* Moderately rapid

*Physiographic province:* Piedmont

*Landform:* Flood plains

*Parent material:* Recent alluvium

*Slope range:* 0 to 2 percent

### **Associated Soils**

- The moderately well drained Batteau soils and the poorly drained Hatboro and Yogaville soils

### **Typical Pedon**

Galtsmill fine sandy loam, 0 to 2 percent slopes, occasionally flooded; 1.3 miles south (170 degrees) of the junction of Highways VA-606 and VA-626, about

2.4 miles east (106 degrees) of the junction of Highways VA-626 and VA-721, in pasture:

Ap—0 to 15 inches; very dark grayish brown (10YR 3/2 broken) and dark brown (10YR 3/3 crushed) fine sandy loam, brown (10YR 5/3) dry; moderate medium granular structure; friable; common fine and medium roots; common fine flakes of mica; slightly acid; abrupt smooth boundary.

Bw1—15 to 35 inches; brown (10YR 4/3) fine sandy loam; weak coarse subangular blocky structure; friable; few fine roots; common fine flakes of mica; slightly acid; clear smooth boundary.

Bw2—35 to 48 inches; brown (10YR 4/3) loam; weak coarse subangular blocky structure; friable; few fine roots; common fine flakes of mica; slightly acid; clear smooth boundary.

Bw3—48 to 72 inches; brown (10YR 4/3) fine sandy loam; weak coarse subangular blocky structure; friable; few fine roots; common fine flakes of mica; slightly acid.

### **Range in Characteristics**

*Thickness of the solum:* 30 to 60 inches or more

*Depth to bedrock:* 60 inches or more

*Rock fragments:* 0 to 15 percent throughout the profile

*Reaction:* Strongly acid to neutral throughout the profile

*Ap horizon:*

Hue—7.5YR or 10YR

Value—3 moist, 3 to 5 dry

Chroma—2 or 3

Texture—fine sandy loam

*Bw horizon:*

Hue—7.5YR or 10YR

Value—3 to 5

Chroma—3 or 4

Texture—sandy loam, fine sandy loam, loam, or silt loam

*C horizon:*

Hue—7.5YR or 10YR

Value—4 or 5

Chroma—3 to 8

Texture—sand, loamy sand, fine sandy loam, or sandy loam; stratified in some pedons

## **Glenelg Series**

*Depth class:* Very deep

*Drainage class:* Well drained

*Permeability:* Moderate

*Physiographic province:* Piedmont

*Landform:* Uplands

*Parent material:* Phyllite, schist, and sandstone residuum

*Slope range:* 15 to 25 percent

### Associated Soils

- Elioak soils that have a clay subsoil and the moderately deep Hazel soils

### Typical Pedon

Glenelg silt loam, 15 to 25 percent slopes; 0.3 mile southwest (219 degrees) of the intersection of Highways VA-655 and VA-722, about 1.2 miles west (282 degrees) of the intersection of Highways VA-654 and VA-655, in woodland:

A—0 to 4 inches; dark yellowish brown (10YR 4/4) silt loam; weak fine granular structure; friable; many fine and medium roots; common fine flakes of mica; very strongly acid; abrupt smooth boundary.

E—4 to 9 inches; yellowish brown (10YR 5/4) loam; weak fine granular structure; friable; common fine and medium roots; many fine flakes of mica; very strongly acid; abrupt smooth boundary.

Bt—9 to 27 inches; yellowish red (5YR 5/6) clay loam; moderate medium subangular blocky structure; friable, slightly sticky, slightly plastic; few fine and medium roots; many fine flakes of mica; common distinct clay films on faces of peds; few medium distinct yellowish brown (10YR 5/4) and brownish yellow (10YR 6/8) lithochromic masses; very strongly acid; clear smooth boundary.

C1—27 to 52 inches; variegated red (2.5YR 4/8 and 5/8) and reddish yellow (7.5YR 6/8) loam saprolite; massive; friable; few fine roots; 5 percent gravel; many fine flakes of mica; strongly acid; gradual wavy boundary.

C2—52 to 65 inches; variegated yellowish brown (10YR 5/6), yellowish red (5YR 5/8), and pale brown (10YR 6/3) loam saprolite; massive; friable; 5 percent gravel; many fine flakes of mica; strongly acid.

### Range in Characteristics

*Thickness of the solum:* 18 to 30 inches

*Depth to bedrock:* 60 inches or more

*Rock fragments:* 0 to 15 percent in the A, E, and Bt horizons; 5 to 35 percent in the C horizon

*Reaction:* Very strongly acid or strongly acid throughout the profile in unlimed areas

*Ap horizon (if it occurs):*

Hue—7.5YR or 10YR

Value—4 or 5

Chroma—3 or 4

Texture—silt loam in the fine-earth fraction

*A horizon:*

Hue—7.5YR or 10YR

Value—3 to 5

Chroma—1 to 4

Texture—silt loam in the fine-earth fraction

*E horizon:*

Hue—7.5YR to 10YR

Value—3 to 5

Chroma—2 to 4

Texture—loam or silt loam in the fine-earth fraction

*Bt horizon:*

Hue—5YR to 10YR

Value—4 or 5

Chroma—4 to 8

Texture—loam, silt loam, silty clay loam, or clay loam in the fine-earth fraction

*C horizon:*

Hue—2.5YR to 10YR

Value—4 to 6

Chroma—2 to 8

Texture—sandy loam or loam in the fine-earth fraction

## Hatboro Series

*Depth class:* Very deep

*Drainage class:* Poorly drained

*Permeability:* Moderate

*Physiographic province:* Piedmont

*Landform:* Flood plains

*Parent material:* Recent alluvium

*Slope range:* 0 to 2 percent

### Associated Soils

- The well drained Colvard and Craigs ville soils, the moderately well drained Suches soils, and the somewhat poorly drained Codorus soils

### Typical Pedon

Hatboro loam, 0 to 2 percent slopes, frequently flooded; 7,000 feet northeast (48 degrees) of the intersection of Highways VA-665 and VA-6553, about 8,000 feet southeast (147 degrees) of the intersection of Highways VA-668 and VA-653, in an area of nutsedge and alder:

A—0 to 12 inches; dark grayish brown (10YR 4/2)

loam; weak medium subangular blocky structure; friable, slightly sticky, slightly plastic; common fine

and medium roots; common fine flakes of mica; few medium prominent irregular strong brown (7.5YR 5/8) and common medium prominent irregular yellowish red (5YR 5/6) iron and manganese masses; moderately acid; clear smooth boundary.

Bg1—12 to 30 inches; dark gray (10YR 4/1) clay loam; weak medium subangular blocky structure; friable, slightly sticky, slightly plastic; common fine and medium roots; common fine flakes of mica; common medium distinct irregular yellowish brown (10YR 5/8) iron and manganese masses; strongly acid; abrupt smooth boundary.

Bg2—30 to 50 inches; gray (10YR 6/1) clay loam; weak medium subangular blocky structure; friable, slightly sticky, slightly plastic; few fine roots; few fine flakes of mica; many fine, medium, and coarse prominent irregular yellowish brown (10YR 5/6) and strong brown (7.5YR 5/8) iron and manganese masses; moderately acid; clear smooth boundary.

Cg1—50 to 65 inches; light brownish gray (10YR 6/2) sandy clay loam; massive; very friable; many fine flakes of mica; common fine, medium, and coarse distinct irregular yellowish brown (10YR 5/8) and strong brown (7.5YR 5/8) iron and manganese masses; moderately acid; abrupt smooth boundary.

Cg2—65 to 70 inches; light brownish gray (10YR 6/2) stratified fine sandy loam and gravel; massive; very friable; many fine flakes of mica; few fine and medium distinct irregular yellowish brown (10YR 5/6) iron and manganese masses; moderately acid.

### Range in Characteristics

*Thickness of the solum:* 40 to 60 inches

*Depth to bedrock:* 60 inches or more

*Rock fragments:* 0 to 10 percent in the A, Ap, E, and Bg horizons; 0 to 80 percent in the C horizon

*Reaction:* Very strongly acid to neutral within a depth of 30 inches in unlimed areas; moderately acid to slightly acid below a depth of 30 inches

#### Ap horizon:

Hue—10YR

Value—3 or 4

Chroma—2 or 3

Texture—loam

#### A horizon (if it occurs):

Hue—10YR

Value—3 or 4

Chroma—2 or 3

Texture—loam

#### Bg horizon:

Hue—horizon has hue of 10YR to 5Y or is neutral in hue

Value—4 to 7

Chroma—0 to 2

Texture—silt loam, sandy clay loam, silty clay loam, or clay loam

#### Cg horizon:

Hue—horizon has hue of 10YR to 5Y or is neutral in hue

Value—4 to 7

Chroma—0 to 2

Texture—silt loam, clay loam, sandy clay loam, or silty clay loam in the upper part of horizon and stratified sand, silt, and clay sediments and gravel in the lower part

## Hayesville Series

*Depth class:* Very deep

*Drainage class:* Well drained

*Permeability:* Moderate

*Physiographic province:* Piedmont

*Landform:* Uplands

*Parent material:* Gneiss and granite residuum

*Slope range:* 2 to 50 percent

### Associated Soils

- Occoquan soils that have less clay in the subsoil than the Hayesville soils, Udorthents that formed from soils altered by human activity, and Wintergreen soils that formed from colluvial or alluvial materials

### Typical Pedon

Hayesville loam, 2 to 7 percent slopes; 0.3 mile southeast (136 degrees) from the intersection of Highways US-29 and VA-653, about 0.2 mile northeast (52 degrees) of the intersection of Highways VA-653 and VA-688, in pasture:

Ap—0 to 6 inches; brown (7.5YR 4/4) loam; weak fine granular structure; friable, slightly sticky, slightly plastic; common fine and medium roots; 10 percent gravel; few fine flakes of mica; moderately acid; clear smooth boundary.

Bt1—6 to 26 inches; red (2.5YR 4/6) clay; moderate medium subangular blocky structure; friable, sticky, plastic; common fine and medium roots; many distinct clay films on faces of peds; 5 percent gravel; common fine flakes of mica; moderately acid; gradual smooth boundary.

Bt2—26 to 40 inches; red (2.5YR 4/6) clay; moderate fine and medium subangular blocky structure;

friable, sticky, plastic; few fine roots; many distinct clay films on faces of peds; common fine and medium flakes of mica; strongly acid; clear wavy boundary.

BC—40 to 57 inches; red (2.5YR 4/8) clay loam; weak fine and medium subangular blocky structure; friable, slightly sticky, slightly plastic; common distinct clay films on faces of peds; common fine and medium flakes of mica; strongly acid; clear wavy boundary.

C—57 to 62 inches; red (2.5YR 4/8) loam saprolite; massive; friable; many fine and medium flakes of mica; common medium distinct reddish yellow (5YR 6/8) lithochromic masses; moderately acid.

### Range in Characteristics

*Thickness of the solum:* 30 to 60 inches

*Depth to bedrock:* 60 inches or more

*Rock fragments:* 0 to 15 percent throughout the profile

*Reaction:* Very strongly acid to moderately acid throughout the profile in unlimed areas

#### *Ap horizon:*

Hue—5YR to 10YR

Value—3 to 5

Chroma—2 to 4

Texture—loam in the fine-earth fraction; clay loam in eroded areas

#### *A horizon (if it occurs):*

Hue—5YR to 10YR

Value—3 or 4

Chroma—2 to 4

Texture—loam in the fine-earth fraction

#### *E horizon (if it occurs):*

Hue—7.5YR or 10YR

Value—4 to 6

Chroma—3 to 8

Texture—fine sandy loam or loam in the fine-earth fraction

#### *Bt horizon:*

Hue—10R to 5YR

Value—4 or 5

Chroma—6 to 8

Texture—clay loam or clay

#### *BC horizon:*

Hue—10R to 5YR

Value—4 or 5

Chroma—6 to 8

Texture—loam, sandy clay loam, or clay loam

#### *C horizon:*

Hue—10R to 5YR

Value—4 to 6

Chroma—4 to 8

Texture—sandy loam, fine sandy loam, loam, or sandy clay loam

The Hayesville soils in Nelson County are considered taxadjuncts to series because they do not meet the criteria for low-activity clays. This difference, however, does not significantly affect the use and management of the soils.

### **Hazel Series**

*Depth class:* Moderately deep

*Drainage class:* Excessively drained

*Permeability:* Moderately rapid

*Physiographic province:* Piedmont

*Landform:* Uplands

*Parent material:* Phyllite, schist, and sandstone residuum

*Slope range:* 7 to 50 percent

### Associated Soils

- Elioak soils that have a clay subsoil and the very deep Glenelg soils

### Typical Pedon

Hazel channery loam, 15 to 25 percent slopes; 1.4 miles south (190 degrees) of the intersection of Highways VA-56 and VA-647, about 2.3 miles southwest (226 degrees) of the intersection of Highways VA-655 and VA-653, in woodland:

Ap—0 to 5 inches; yellowish brown (10YR 5/4)

channery loam; weak fine granular structure; very friable; common fine medium and coarse roots; 20 percent channers; very strongly acid; clear smooth boundary.

Bw—5 to 19 inches; strong brown (7.5YR 5/6)

channery sandy loam; weak fine subangular blocky structure; friable; few fine and medium roots; 25 percent channers; common fine flakes of mica; strongly acid; clear wavy boundary.

C—19 to 31 inches; light yellowish brown (10YR 5/4)

very channery sandy loam saprolite; yellowish red (5YR 5/6) lenses of clay; massive; friable; few fine roots; 40 percent channers; common fine flakes of mica; strongly acid; clear smooth boundary.

R—31 inches; hard graywacke sandstone bedrock.

### Range in Characteristics

*Thickness of the solum:* 14 to 28 inches

*Depth to bedrock:* 20 to 40 inches

*Rock fragments:* 15 to 35 percent in the A and Ap horizons; 5 to 40 percent in the Bw horizon; 20 to 50 percent in the C horizon

*Reaction:* Very strongly acid or strongly acid throughout the profile in unlimed areas

*Ap horizon:*

Hue—7.5YR or 10YR

Value—4 or 5

Chroma—3 to 6

Texture—loam in the fine-earth fraction

*A horizon (if it occurs):*

Hue—7.5YR or 10YR

Value—3 to 5

Chroma—2 to 4

Texture—loam in the fine-earth fraction

*E horizon (if it occurs):*

Hue—7.5YR or 10YR

Value—4 or 5

Chroma—3 to 6

Texture—loam or silt loam in the fine-earth fraction

*Bw horizon:*

Hue—7.5YR or 10YR

Value—4 or 5

Chroma—3 to 8

Texture—sandy loam, fine sandy loam, loam, or silt loam in the fine-earth fraction

*C horizon:*

Hue—7.5YR or 10YR

Value—4 or 5

Chroma—3 to 8

Texture—fine sandy loam, sandy loam, loam, or silt loam in the fine-earth fraction

## **Jackland Series**

*Depth class:* Very deep

*Drainage class:* Somewhat poorly drained

*Permeability:* Very slow

*Physiographic province:* Piedmont

*Landform:* Uplands

*Parent material:* Gabbro, diorite, and greenstone residuum

*Slope range:* 2 to 15 percent

### **Associated Soils**

- The moderately deep Spriggs soils that have less clay in the subsoil than the Jackland soils

### **Typical Pedon**

Jackland gravelly silt loam, 2 to 7 percent slopes; 0.7 mile southeast (145 degrees) of the intersection of Highways VA-722 and VA-647, about 2.2 miles southwest (227 degrees) of the intersection of Highways VA-722 and VA-56, in woodland:

Ap—0 to 9 inches; dark brown (10YR 4/3) gravelly silt loam; weak fine granular structure; friable, slightly sticky, slightly plastic; many fine, medium, and coarse roots; 30 percent gravel and manganese nodules; very strongly acid; abrupt smooth boundary.

Bt—9 to 30 inches; dark yellowish brown (10YR 4/4) clay; weak coarse prismatic structure parting to moderate medium angular blocky; very firm, very sticky, very plastic; few fine and medium roots; common slickensides and pressure faces; many distinct clay films on faces of peds; 10 percent gravel and manganese nodules; common medium distinct irregular black (10YR 2/1) manganese masses and common medium prominent grayish brown (2.5Y 5/2) iron and manganese depletions; strongly acid; abrupt smooth boundary.

C—30 to 61 inches; variegated light olive brown (2.5Y 5/4), pale yellow (2.5Y 7/4), and black (10YR 2/1) sandy clay loam saprolite that has lenses of clay; massive; very firm, sticky, plastic; few fine roots; common fine flakes of mica; 10 percent gravel and manganese nodules; strongly acid.

### **Range in Characteristics**

*Thickness of the solum:* 30 to 48 inches

*Depth to bedrock:* 60 inches or more

*Rock fragments:* 15 to 35 percent in the A, Ap, and Bt horizons; 0 to 35 percent in the C horizon

*Reaction:* In unlimed areas, very strongly acid to moderately acid in the A, Ap, and E horizons and the upper part of the Bt horizon; very strongly acid to mildly alkaline in the lower part of the Bt horizon and in the C horizon

*Ap horizon:*

Hue—7.5YR or 10YR

Value—4 or 5

Chroma—3 to 6

Texture—silt loam in the fine-earth fraction

*A horizon (if it occurs):*

Hue—7.5YR or 10YR

Value—2 or 3

Chroma—0 to 2

Texture—silt loam in the fine-earth fraction

*E horizon (if it occurs):*

Hue—7.5YR or 10YR

Value—4 to 6

Chroma—3 to 6

Texture—silt loam in the fine-earth fraction

*Bt horizon:*

Hue—7.5YR to 2.5Y

Value—4 or 5

Chroma—3 to 6; individual subhorizons may have chroma of 1 or 2

Texture—clay

*C horizon:*

Hue—7.5YR to 2.5Y

Value—4 to 8

Chroma—1 to 8

Texture—sandy loam, sandy clay loam, or clay loam in the fine-earth fraction

## **Lew Series**

*Depth class:* Very deep

*Drainage class:* Well drained

*Permeability:* Moderate

*Physiographic province:* Blue Ridge

*Landform:* Uplands and mountain ridges

*Parent material:* Colluvium and local alluvium

*Slope range:* 2 to 75 percent

### **Associated Soils**

- The moderately deep Catoctin soils, Craigsville soils on adjacent flood plains, and Myersville soils that have fewer rock fragments throughout than the Lew soils

### **Typical Pedon**

Lew channery silt loam, 7 to 15 percent slopes, extremely bouldery; 0.6 mile southwest (230 degrees) of the intersection of Highways VA-151 and VA-750, about 800 feet northeast (44 degrees) of the intersection of Highways VA-151 and VA-631, in woodland:

Oi—2 inches to 0; undecomposed and partially decomposed leaves and twigs.

A—0 to 8 inches; dark yellowish brown (10YR 3/4) channery silt loam; moderate fine and medium granular structure; friable, slightly sticky, slightly plastic; many very fine, fine, medium, and coarse roots; 30 percent channers; strongly acid; clear smooth boundary.

Bt1—8 to 36 inches; dark yellowish brown (10YR 4/6) very channery silty clay loam; moderate fine subangular blocky structure; friable, slightly sticky, slightly plastic; many very fine, fine, medium, and coarse roots; many distinct clay films on faces of peds and rock fragments; 40 percent channers; strongly acid; clear smooth boundary.

Bt2—36 to 62 inches; strong brown (7.5YR 5/6) extremely channery silty clay loam; moderate medium subangular blocky structure; friable, slightly sticky, slightly plastic; common very fine, fine, and medium roots; many distinct clay films on

faces of peds and rock fragments; 65 percent channers; very strongly acid.

### **Range in Characteristics**

*Thickness of the solum:* 40 to 60 inches or more

*Depth to bedrock:* 60 inches or more

*Rock fragments:* 15 to 35 percent in the A horizon; 35 to 70 percent in the Bt and C horizons

*Reaction:* Very strongly acid to moderately acid throughout the profile in unlimed areas

*A horizon:*

Hue—5YR to 10YR

Value—2 to 4

Chroma—2 to 4

Texture—silt loam in the fine-earth fraction

*Bt horizon:*

Hue—5YR to 10YR

Value—4 or 5

Chroma—4 to 8

Texture—clay loam or silty clay loam in the fine-earth fraction

*C horizon (if it occurs):*

Hue—5YR to 10YR

Value—4 or 5

Chroma—4 to 8

Texture—sandy loam, loam, or silt loam in the fine-earth fraction

## **Littlejoe Series**

*Depth class:* Deep

*Drainage class:* Well drained

*Permeability:* Moderate

*Physiographic province:* Piedmont

*Landform:* Uplands

*Parent material:* Sericite schist residuum

*Slope range:* 2 to 15 percent

### **Associated Soils**

- Buffstat soils that have a yellowish brown subsoil; the shallow Bugley soils; Arcola soils that have less clay in the subsoil than the Littlejoe soils; Warminster soils that formed from Triassic shale, sandstone, and conglomerate; and Wintergreen soils that have a subsoil of red clay and that formed from colluvium and alluvium

### **Typical Pedon**

Littlejoe silt loam, 2 to 7 percent slopes; 2.0 miles northeast (38 degrees) of the intersection of Highways

VA-657 and VA-60, about 1.2 miles southwest (220 degrees) of the intersection of Highways VA-626 and VA-721, in woodland:

- A—0 to 2 inches; yellowish brown (10YR 5/4) silt loam; weak fine granular structure; friable, slightly sticky, slightly plastic; many fine, medium, and coarse roots; 2 percent gravel; few fine flakes of mica; very strongly acid; abrupt smooth boundary.
- E—2 to 8 inches; brownish yellow (10YR 6/6) loam; weak fine granular structure; friable, slightly sticky, slightly plastic; common fine and medium roots; 2 percent gravel; few fine flakes of mica; very strongly acid; clear smooth boundary.
- Bt1—8 to 28 inches; red (2.5YR 5/8) silty clay; moderate fine and medium subangular blocky structure; firm, sticky, plastic; few fine and medium roots; common fine flakes of mica; many distinct clay films on faces of peds; very strongly acid; clear smooth boundary.
- Bt2—28 to 41 inches; red (2.5YR 5/8) silty clay loam; weak medium subangular blocky structure; friable, slightly sticky, slightly plastic; few fine and medium roots; many fine flakes of mica; few distinct clay films on faces of peds; common medium distinct yellowish red (2.5YR 5/6) remnants of rock fragments; very strongly acid; abrupt irregular boundary.
- Cr—41 inches; slightly weathered soft sericite schist bedrock that crushes to reddish brown (5YR 5/3) silt loam.

#### Range in Characteristics

- Thickness of the solum:* 25 to 50 inches  
*Depth to soft bedrock:* 40 to 60 inches  
*Depth to hard bedrock:* 40 to 60 inches or more  
*Rock fragments:* 0 to 15 percent in the A, Ap, E, and Bt horizons; 0 to 50 percent in the C and Cr horizons  
*Reaction:* Very strongly acid or strongly acid throughout the profile in unlimed areas
- Ap horizon (if it occurs):*  
 Hue—7.5YR or 10YR  
 Value—4 or 5  
 Chroma—2 to 8  
 Texture—silt loam
- A horizon:*  
 Hue—7.5YR or 10YR  
 Value—3 to 5  
 Chroma—2 to 4  
 Texture—silt loam
- E horizon:*  
 Hue—7.5YR or 10YR

Value—5 or 6

Chroma—3 to 6

Texture—fine sandy loam, loam, or silt loam in the fine-earth fraction

#### *Bt horizon:*

Hue—10R to 5YR; 5YR only occurring in subhorizons

Value—4 or 5

Chroma—6 to 8

Texture—silty clay loam, silty clay, or clay; average of more than 30 percent silt in the particle-size control section

#### *C horizon (if it occurs):*

Hue—2.5YR to 10YR

Value—4 to 8

Chroma—4 to 8

Texture—silt loam or silty clay loam in the fine-earth fraction

#### *Cr horizon:*

Hue—2.5YR to 10YR

Value—4 to 8

Chroma—4 to 8

Texture—slightly weathered schist that crushes to silt loam or silty clay loam in the fine-earth fraction

### **Minnieville Series**

*Depth class:* Very deep

*Drainage class:* Well drained

*Permeability:* Moderate

*Physiographic province:* Piedmont

*Landform:* Uplands

*Parent material:* Greenstone, gabbro, and hornblende gneiss residuum

*Slope range:* 2 to 50 percent

#### **Associated Soils**

- Spriggs soils that have less clay in the subsoil than the Minnieville soils and the deep Fauquier soils

#### **Typical Pedon**

Minnieville loam, 2 to 7 percent slopes; 1.7 miles east (98 degrees) of the intersection of Highways VA-626 and VA-721, about 1.8 miles south (185 degrees) of the intersection of Highways VA-661 and VA-654, in woodland:

- Ap—0 to 12 inches; brown (7.5YR 4/4) loam; moderate fine granular structure; friable, slightly sticky; many fine and medium roots; 2 percent gravel; moderately acid; abrupt smooth boundary.

Bt1—12 to 32 inches; red (2.5YR 4/8) clay; moderate fine and medium subangular blocky structure; firm, sticky, plastic; common fine and medium roots; many distinct clay films on faces of peds; 2 percent gravel; moderately acid; clear smooth boundary.

Bt2—32 to 49 inches; red (2.5YR 4/8) clay; moderate fine and medium subangular blocky structure; firm, sticky, plastic; few fine and medium roots; many distinct clay films on faces of peds; few brownish yellow (10YR 6/8) weathered rock fragments; strongly acid; clear smooth boundary.

C—49 to 72 inches; red (2.5YR 4/8) clay saprolite; massive; firm, sticky, plastic; few fine and medium roots; few clay flows in relict rock joints; 10 percent gravel; common brownish yellow (10YR 6/8) weathered rock fragments; moderately acid.

### Range in Characteristics

*Thickness of the solum:* 30 to 60 inches

*Depth to bedrock:* 60 inches or more

*Rock fragments:* 0 to 10 percent angular vein quartz gravel throughout the profile; 0 to 10 percent partially weathered hornblende gneiss or hornblende schist in the A and Ap horizons and the upper part of the Bt horizon; 0 to 25 percent partially weathered hornblende gneiss or hornblende schist in the lower part of the Bt horizon and in the C horizon

*Reaction:* Strongly acid or moderately acid throughout the profile in unlimed areas

#### *Ap horizon:*

Hue—5YR or 7.5YR

Value—3 to 5

Chroma—3 to 6

Texture—loam

#### *A horizon (if it occurs):*

Hue—5YR or 7.5YR

Value—3 to 5

Chroma—3 or 4

Texture—loam

#### *E horizon (if it occurs):*

Hue—5YR or 7.5YR

Value—5 or 6

Chroma—3 to 6

Texture—loam or silt loam

#### *Bt horizon:*

Hue—10R or 2.5YR

Value—3 or 4

Chroma—4 to 8

Texture—clay loam, silty clay, or clay in the fine-earth fraction

#### *C horizon:*

Hue—10R to 10YR

Value—4 to 8

Chroma—1 to 8

Texture—loam, silt loam, clay loam, silty clay loam, or clay in the fine-earth fraction

## Myersville Series

*Depth class:* Deep

*Drainage class:* Well drained

*Permeability:* Moderate

*Physiographic province:* Blue Ridge

*Landform:* Mountain ridges

*Parent material:* Greenstone residuum

*Slope range:* 7 to 55 percent

### Associated Soils

- The moderately deep Catoctin soils and Lew soils that contain more rock fragments than the Myersville soils and occur in drainageways

### Typical Pedon

Myersville channery silt loam in an area of Myersville-Catoctin complex, 7 to 15 percent slopes, extremely stony; 1.4 miles west (280 degrees) of the intersection of Highways VA-151 and VA-631, about 2.0 miles north (340 degrees) of the intersection of Highways VA-631 and VA-840, in woodland:

Ap—0 to 11 inches; dark brown (10YR 4/3) channery silt loam; moderate very fine and fine granular structure; very friable, slightly sticky, slightly plastic; many fine, medium, and coarse roots; 15 percent channers; strongly acid; clear smooth boundary.

Bt1—11 to 25 inches; yellowish brown (10YR 5/8) channery clay loam; moderate very fine and fine subangular blocky structure; friable, slightly sticky, slightly plastic; common fine and medium roots; common distinct clay films on faces of peds; 20 percent channers; strongly acid; gradual wavy boundary.

Bt2—25 to 40 inches; yellowish brown (10YR 5/6) channery clay loam; moderate fine subangular blocky structure; friable, slightly sticky, slightly plastic; common fine and medium roots; common distinct clay films on faces of peds; 25 percent channers; common medium distinct black (10YR 2/1) and yellowish brown (10YR 6/8) rock fragment remnants; moderately acid; clear smooth boundary.

C—40 to 47 inches; very pale brown (10YR 7/4) very channery silt loam saprolite; massive; friable,

slightly sticky, slightly plastic; few fine and medium roots; common thick clay flows in relict rock joints; 40 percent channers; common medium distinct black (10YR 2/1) and yellowish brown (10YR 5/8) lithochromic masses; strongly acid; abrupt smooth boundary.

Cr—47 inches; slightly weathered soft greenstone bedrock that crushes to yellow (10YR 7/6) silt loam; rock controlled structure; firm, slightly sticky, slightly plastic; 5 percent channers; common medium distinct black (10YR 2/1) rock fragment remnants; strongly acid.

### Range in Characteristics

*Thickness of the solum:* 20 to 40 inches

*Depth to soft bedrock:* 40 inches or more

*Depth to hard bedrock:* 60 inches or more

*Rock fragments:* 15 to 35 percent in the A, Ap, and E horizons and the upper part of the Bt horizon; 3 to 50 percent in the lower part of the Bt horizon; 5 to 75 percent in the C and Cr horizons (most fragments in the Cr horizon are highly weathered and crush easily)

*Reaction:* Very strongly acid to moderately acid throughout the profile in unlimed areas

*Ap horizon:*

Hue—5YR to 10YR

Value—2 to 5

Chroma—2 to 4

Texture—silt loam in the fine-earth fraction

*A horizon (if it occurs):*

Hue—5YR to 10YR

Value—2 to 5

Chroma—2 to 4

Texture—silt loam in the fine-earth fraction

*E horizon (if it occurs):*

Hue—5YR to 10YR

Value—4 or 5

Chroma—3 or 4

Texture—loam or silt loam in the fine-earth fraction

*Bt horizon:*

Hue—5YR to 10YR

Value—4 to 6

Chroma—4 to 8

Texture—loam, silt loam, clay loam, silty clay loam, or subhorizons of clay in the fine-earth fraction

*C horizon:*

Hue—2.5YR to 10YR

Value—4 to 8

Chroma—1 to 8

Texture—loam, silt loam, clay loam, or silty clay loam in the fine-earth fraction

*Cr horizon:*

Hue—2.5YR to 10YR

Value—4 to 8

Chroma—1 to 8

Texture—slightly weathered greenstone that crushes to loam, silt loam, clay loam, or silty clay loam in the fine-earth fraction

## Occoquan Series

*Depth class:* Deep

*Drainage class:* Well drained and somewhat excessively drained

*Permeability:* Moderate and moderately rapid

*Physiographic province:* Piedmont

*Landform:* Uplands

*Parent material:* Gneiss, granite, and granodiorite residuum

*Slope range:* 7 to 50 percent

### Associated Soils

- The very deep Hayesville soils that have a clay subsoil, the very deep Edneytown soils that have a thicker subsoil than the Occoquan soils, and the moderately deep Peaks soils that have more rock fragments throughout than the Occoquan soils

### Typical Pedon

Occoquan loam, 25 to 50 percent slopes; 0.2 mile west (270 degrees) of the intersection of Highways US-29 and VA-651, about 1.3 miles south (180 degrees) of the intersection of Highways VA-651 and VA-718, in woodland:

A—0 to 4 inches; dark brown (10YR 4/3) loam; weak fine granular structure; friable; common fine, medium, and coarse roots; 12 percent gravel; strongly acid; clear smooth boundary.

Bt—4 to 13 inches; yellowish red (5YR 5/6) sandy clay loam; weak fine subangular blocky structure; slightly sticky, slightly plastic; common fine and medium roots; few distinct clay films on faces of peds; 12 percent gravel; common fine flakes of mica; strongly acid; clear smooth boundary.

C—13 to 41 inches; yellowish red (5YR 5/6) sandy loam saprolite; massive; friable; few fine and medium roots; 2 percent gravel; common fine flakes of mica; strongly acid; clear smooth boundary.

Cr—41 to 60 inches; slightly weathered soft gneiss bedrock that crushes to strong brown (7.5YR 5/8) sandy loam.

### Range in Characteristics

*Thickness of the solum:* 12 to 24 inches  
*Depth to soft bedrock:* 40 to 60 inches  
*Depth to hard bedrock:* 60 inches or more  
*Rock fragments:* 0 to 15 percent throughout the profile  
*Reaction:* Extremely acid to strongly acid throughout the profile in unlimed areas

#### A horizon:

Hue—10YR or 2.5Y  
 Value—4 to 7  
 Chroma—2 to 4  
 Texture—loam

#### Ap horizon (if it occurs):

Hue—10YR or 2.5Y  
 Value—4 to 7  
 Chroma—2 to 4  
 Texture—loam

#### E horizon (if it occurs):

Hue—10YR or 2.5Y  
 Value—5 to 7  
 Chroma—3 or 4  
 Texture—coarse sandy loam, sandy loam, or loam

#### Bt horizon:

Hue—5YR to 10YR  
 Value—5 or 6  
 Chroma—4 to 8  
 Texture—sandy loam, loam, sandy clay loam, or clay loam

#### C horizon:

Hue—2.5YR to 10YR  
 Value—4 to 8  
 Chroma—1 to 8  
 Texture—loamy sand, sandy loam, or loam

#### Cr horizon:

Hue—2.5YR to 10YR  
 Value—4 to 8  
 Chroma—1 to 8  
 Texture—slightly weathered gneiss that crushes to loamy sand, sandy loam, or loam

### Peaks Series

*Depth class:* Moderately deep  
*Drainage class:* Somewhat excessively drained  
*Permeability:* Moderately rapid  
*Physiographic province:* Blue Ridge  
*Landform:* Mountain ridges  
*Parent material:* Granite, granodiorite, and gneiss residuum  
*Slope range:* 7 to 75 percent

### Associated Soils

- Occoquan, Edneytown, and Saunook soils that have fewer rock fragments throughout than the Peaks soils

### Typical Pedon

Peaks very gravelly loam in an area of Edneytown-Peaks complex, 35 to 55 percent slopes, extremely stony; 2.2 miles northeast (50 degrees) of the intersection of Highways VA-699 and VA-680, about 3.0 miles north (359 degrees) of the intersection of Highways VA-151 and VA-672, in woodland:

Oi—1 inch to 0; undecomposed and partially decomposed leaves and twigs.

A—0 to 2 inches; very dark grayish brown (10YR 3/2) very gravelly loam; weak fine granular structure; friable; many fine, medium, and coarse roots; 40 percent gravel; few fine flakes of mica; very strongly acid; abrupt smooth boundary.

E—2 to 7 inches; dark yellowish brown (10YR 4/4) very gravelly loam; weak fine granular structure; friable; many fine, medium, and coarse roots; 40 percent gravel; few fine flakes of mica; very strongly acid; clear smooth boundary.

Bw—7 to 25 inches; strong brown (7.5YR 5/6) very gravelly loam; weak medium subangular blocky structure; friable; common fine and medium roots; 50 percent gravel; few fine flakes of mica; strongly acid; clear wavy boundary.

Cr—25 to 36 inches; slightly weathered soft granodiorite bedrock that crushes to yellowish brown (10YR 5/6) extremely channery loam.

R—36 inches; hard granodiorite bedrock.

### Range in Characteristics

*Thickness of the solum:* 20 to 40 inches  
*Depth to bedrock:* 48 inches or more  
*Rock fragments:* 35 to 70 percent in the A and Bw horizons; 60 to 90 percent in the C horizon  
*Reaction:* Very strongly acid or strongly acid throughout the profile in unlimed areas

#### A horizon:

Hue—7.5YR or 10YR  
 Value—3 or 4  
 Chroma—1 to 4  
 Texture—loam in the fine-earth fraction

#### Bw horizon:

Hue—7.5YR or 10YR  
 Value—4 to 6  
 Chroma—3 to 6  
 Texture—sandy loam or loam in the fine-earth fraction

*C horizon:*

Hue—7.5YR or 10YR

Value—4 to 6

Chroma—3 to 6

Texture—sandy loam or loam in the fine-earth fraction

*Cr horizon:*

Hue—7.5YR or 10YR

Value—4 to 6

Chroma—3 to 6

Texture—slightly weathered granite, gneiss, or granodiorite that crushes to sandy loam or loam in the fine-earth fraction

**Pineywoods Series***Depth class:* Deep*Drainage class:* Poorly drained*Permeability:* Slow*Physiographic province:* Piedmont*Landform:* Uplands*Parent material:* Anorthosite residuum*Slope range:* 0 to 2 percent**Associated Soils**

- The moderately well drained Sketerville soils and the well drained Colleen soils

**Typical Pedon**

Pineywoods silt loam, 0 to 2 percent slopes; 2,300 feet southeast (146 degrees) of the intersection of Highways VA-151 and VA-676, about 7,000 feet north (14 degrees) of the intersection of Highways VA-674 and VA-56, in woodland:

A—0 to 1 inch; very dark gray (10YR 4/1) silt loam; weak fine granular structure; friable, slightly sticky, slightly plastic; many fine, medium, and coarse roots; 5 percent blue quartz gravel; extremely acid; abrupt smooth boundary.

Eg—1 to 6 inches; light brownish gray (2.5Y 6/2) silt loam; weak fine granular structure; friable, slightly sticky, slightly plastic; common fine and medium roots; 5 percent blue quartz gravel; common medium distinct brownish yellow (10YR 6/8) iron and manganese masses; extremely acid; clear smooth boundary.

Btg1—6 to 15 inches; light brownish gray (2.5Y 6/2) silty clay; moderate fine and medium subangular blocky structure; firm, sticky, plastic; common fine and medium roots; many distinct clay films on faces of peds; 2 percent blue quartz gravel; common medium distinct brownish yellow (10YR

6/8) iron and manganese masses; extremely acid; clear smooth boundary.

Btg2—15 to 22 inches; light brownish gray (2.5Y 6/2) clay; weak medium prismatic structure parting to moderate fine and medium angular blocky; firm, sticky, plastic; few fine and medium roots; many distinct clay films on faces of peds; many coarse distinct pale brown (10YR 6/3) iron and manganese masses; strongly acid; abrupt irregular boundary.

Cg—22 to 41 inches; white (N 8/1) loam saprolite; massive; friable, slightly sticky, slightly plastic; few fine roots; common clay seams; 5 percent blue quartz gravel; many medium distinct irregular light gray (10YR 6/1) manganese stains and many medium distinct irregular reddish yellow (7.5YR 6/8) iron and manganese masses; strongly acid; clear smooth boundary.

Cr—41 inches; light gray (N 7/0), slightly weathered soft anorthosite bedrock that crushes to clay loam.

**Range in Characteristics***Thickness of the solum:* 20 to 40 inches*Depth to soft bedrock:* 40 to 60 inches*Depth to hard bedrock:* 60 inches or more

*Rock fragments:* 0 to 15 percent in the A, Ap, and Eg horizons; 0 to 35 percent in the Btg, Cg, and Cr horizons

*Reaction:* Extremely acid to slightly acid in the A, Ap, and Eg horizons in unlimed areas; very strongly acid or strongly acid in the Btg horizon; strongly acid to slightly acid in the Cg and Cr horizons

*Ap horizon (if it occurs):*

Hue—10YR or 2.5Y

Value—2 to 4

Chroma—1 to 4

Texture—silt loam

*A horizon:*

Hue—10YR or 2.5Y

Value—2 to 4

Chroma—1 to 4

Texture—silt loam

*Eg horizon (if it occurs):*

Hue—10YR or 2.5Y

Value—4 to 7

Chroma—1 or 2

Texture—fine sandy loam, loam, or silt loam in the fine-earth fraction

*Btg horizon:*

Hue—horizon has hue of 10YR to 5Y or is neutral in hue

Value—5 to 8

Chroma—0 to 2; individual subhorizons may have higher chroma

Texture—silty clay loam, clay loam, silty clay, or clay in the fine-earth fraction

*Cg horizon:*

Hue—horizon has hue of 10YR to 5Y or is neutral in hue

Value—5 to 8

Chroma—0 to 2

Texture—sandy loam, loam, silt loam, silty clay loam, or clay loam in the fine-earth fraction

*Cr horizon:*

Hue—horizon has hue of 2.5Y or 5Y or is neutral in hue

Value—7 or 8

Chroma—0 or 1

Texture—slightly weathered anorthosite that crushes to sandy loam, loam, silt loam, silty clay loam, or clay loam in the fine-earth fraction

## **Saunook Series**

*Depth class:* Very deep

*Drainage class:* Well drained

*Permeability:* Moderate

*Physiographic province:* Blue Ridge

*Landform:* Upland benches and fans

*Parent material:* Colluvium

*Slope range:* 7 to 50 percent

### **Associated Soils**

- The moderately deep Peaks soils that have more rock fragments throughout than the Saunook soils and Edneytown and Thurmont soils that do not have a dark surface layer

### **Typical Pedon**

Saunook loam, 7 to 15 percent slopes; 1.4 miles west (262 degrees) of the intersection of Highways VA-56 and VA-699, about 2.2 miles south (180 degrees) of the intersection of Highways VA-56 and VA-814, in woodland:

A—0 to 9 inches; very dark grayish brown (10YR 3/2) loam; weak fine granular structure; friable, slightly sticky, slightly plastic; many fine, medium, and coarse roots; few fine flakes of mica; 5 percent gravel; strongly acid; abrupt smooth boundary.

Bt1—9 to 29 inches; brown (7.5YR 4/4) clay loam; moderate fine and medium subangular blocky structure; friable, slightly sticky, slightly plastic; fine and medium roots; few fine flakes of mica; common distinct clay films on faces of peds; 5

percent gravel; very strongly acid; clear smooth boundary.

Bt2—29 to 52 inches; strong brown (7.5YR 4/6) clay loam; weak fine and medium subangular blocky structure; friable, slightly sticky, slightly plastic; common fine and medium roots; few fine flakes of mica; few distinct clay films on faces of peds; 10 percent gravel; very strongly acid; clear smooth boundary.

C—52 to 61 inches; yellowish brown (10YR 5/4) very cobbly sandy loam; massive; friable; few fine flakes of mica; 50 percent cobbles; very strongly acid.

### **Range in Characteristics**

*Thickness of the solum:* 40 to 60 inches or more

*Depth to bedrock:* 60 inches or more

*Rock fragments:* 0 to 15 percent in the A and Ap horizons; 0 to 35 percent in the Bt horizon; 0 to 50 percent in the C horizon

*Reaction:* Extremely acid to moderately acid in the A and Ap horizons in unlimed areas; very strongly acid to slightly acid in the Bt and C horizons

*Ap horizon (if it occurs):*

Hue—7.5YR or 10YR

Value—2 or 3 moist, 4 or 5 dry

Chroma—2 to 4

Texture—loam

*A horizon:*

Hue—7.5YR or 10YR

Value—2 or 3 moist, 4 or 5 dry

Chroma—2 to 4

Texture—loam

*Bt horizon:*

Hue—7.5YR or 10YR

Value—4 to 6

Chroma—4 to 8

Texture—loam, sandy clay loam, or clay loam in the fine-earth fraction

*C horizon:*

Hue—7.5YR to 2.5Y

Value—4 to 8

Chroma—4 to 8

Texture—sandy loam, fine sandy loam, loam, sandy clay loam, or clay loam in the fine-earth fraction

## **Sketerville Series**

*Depth class:* Very deep

*Drainage class:* Moderately well drained

*Permeability:* Slow

*Physiographic province:* Piedmont

*Landform:* Uplands

*Parent material:* Anorthosite residuum

*Slope range:* 2 to 7 percent

### Associated Soils

- The poorly drained Pineywoods soils and the well drained Colleen soils

### Typical Pedon

Sketerville silt loam, 2 to 7 percent slopes; 3,000 feet northeast (45 degrees) of the intersection of Highways VA-778 and VA-6764, about 3,750 feet southwest (242 degrees) of the intersection of Highways VA-676 and VA-677, in a hay field:

- Ap—0 to 4 inches; 80 percent dark grayish brown (10YR 4/2), 10 percent pale brown (10YR 3/3), and 10 percent yellow (10YR 7/3) silt loam; weak fine granular structure; friable, slightly sticky, slightly plastic; common fine and medium roots; extremely acid; abrupt smooth boundary.
- Bt1—4 to 12 inches; light yellowish brown (10YR 6/4) clay; moderate fine and medium subangular blocky structure; friable, slightly sticky, plastic; few fine roots; many distinct clay films on faces of peds; few fine flakes of mica; 2 percent blue quartz and anorthosite gravel; few medium faint irregular brownish yellow (10YR 6/6) iron and manganese masses and few medium faint very pale brown (10YR 7/3) iron and manganese depletions; extremely acid; clear smooth boundary.
- Bt2—12 to 42 inches; yellowish brown (10YR 5/4) clay; moderate fine and medium subangular blocky structure; firm, sticky, plastic; many distinct clay films on faces of peds; few fine flakes of mica; common medium distinct light brownish gray (2.5Y 6/2) iron and manganese depletions and few medium faint brownish yellow (10YR 6/6) iron and manganese masses; very strongly acid; clear smooth boundary.
- Cg1—42 to 52 inches; 80 percent gray (10YR 5/1) and 20 percent light brownish gray (2.5Y 6/2) clay saprolite; massive; firm, slightly sticky, slightly plastic; few medium faint irregular brownish yellow (10YR 6/8) iron and manganese masses; very strongly acid; clear smooth boundary.
- Cg2—52 to 70 inches; 50 percent white (N 8/0), 25 percent light gray (N 7/0), and 25 percent light brownish gray (2.5Y 6/2) silty clay loam saprolite; massive; friable, slightly sticky, slightly plastic; common fine flakes of mica; 10 percent quartz gravel; many medium distinct brownish yellow

(10YR 6/8) iron and manganese masses; strongly acid; abrupt smooth boundary.  
R—70 inches; white (N 8/0) hard anorthosite bedrock.

### Range in Characteristics

*Thickness of the solum:* 20 to 40 inches

*Depth to bedrock:* 60 inches or more

*Rock fragments:* 0 to 15 percent in the Ap, A, and E horizons; 0 to 35 percent in the BtCg and Cr horizons

*Reaction:* Extremely acid to slightly acid in the A, Ap, and E horizons in unlimed areas; extremely acid to strongly acid in the Bt horizon; very strongly acid to moderately acid in the Cg horizon

#### Ap horizon:

Hue—10YR or 2.5Y

Value—2 to 4

Chroma—2 to 4

Texture—silt loam

#### A horizon (if it occurs):

Hue—10YR or 2.5Y

Value—2 to 4

Chroma—2 to 4

Texture—silt loam

#### E horizon (if it occurs):

Hue—10YR or 2.5Y

Value—6 or 7

Chroma—3 to 6

Texture—fine sandy loam, loam, or silt loam in the fine-earth fraction

#### Bt horizon:

Hue—10YR or 2.5Y

Value—5 to 7

Chroma—4 to 8

Texture—clay loam, silty clay loam, silty clay, or clay in the fine-earth fraction

#### Cg horizon:

Hue—horizon has hue of 10YR to 5Y or is neutral in hue

Value—5 to 8

Chroma—0 to 2

Texture—sandy loam, loam, silt loam, clay loam, or silty clay loam in the fine-earth fraction

#### Cr horizon (if it occurs):

Hue—horizon has hue of 2.5Y or 5Y or is neutral in hue

Value—7 or 8

Chroma—0 or 1

Texture—slightly weathered anorthosite that crushes to sandy loam, loam, silt loam, clay loam, or silty clay loam in the fine-earth fraction

### ***Spriggs Series***

*Depth class:* Moderately deep

*Drainage class:* Well drained

*Permeability:* Moderate

*Physiographic province:* Piedmont and Blue Ridge

*Landform:* Uplands

*Parent material:* Gabbro, diorite, and greenstone residuum

*Slope range:* 7 to 50 percent

#### **Associated Soils**

- Fauquier, Jackland, and Minnieville soils that contain more clay in the subsoil than the Spriggs soils

#### **Typical Pedon**

Spriggs loam, 7 to 15 percent slopes, very stony; 0.7 mile northeast (57 degrees) of the intersection of Highways VA-657 and VA-721, about 0.8 mile east (80 degrees) of the intersection of Highways VA-657 and VA-658, in woodland:

A—0 to 4 inches; brown (10YR 4/3) loam; weak fine granular structure; friable, slightly sticky, slightly plastic; many fine and medium roots; few black medium manganese nodules; 5 percent gravel; few fine flakes of mica; strongly acid; clear smooth boundary.

Bt—4 to 14 inches; yellowish brown (10YR 5/6) gravelly loam; weak fine subangular blocky structure; friable, sticky, plastic; few fine and medium roots; few distinct clay films on faces of peds; few black medium manganese nodules; 20 percent gravel; few fine flakes of mica; strongly acid; clear smooth boundary.

C—14 to 20 inches; yellowish brown (10YR 5/6) gravelly loam saprolite; massive; friable, slightly sticky, slightly plastic; few fine and medium roots; few black medium manganese nodules; 25 percent gravel; few fine flakes of mica; moderately acid; abrupt smooth boundary.

Cr—20 to 41 inches; slightly weathered soft gabbro bedrock that crushes to yellowish brown (10YR 5/4), strong brown (7.5YR 5/8), and light brownish gray (10YR 6/2) gravelly sandy loam; rock controlled structure; firm; few fine roots; 25 percent gravel; few fine flakes of mica; moderately acid; abrupt wavy boundary.

R—41 inches; hard gabbro bedrock.

#### **Range in Characteristics**

*Thickness of the solum:* 12 to 24 inches

*Depth to soft bedrock:* 20 to 40 inches

*Depth to hard bedrock:* 40 to 60 inches

*Rock fragments:* 1 to 5 percent in the A, Ap, and E horizons and the upper part of the Bt horizon; 1 to 35 percent in the lower part of the Bt horizon and in the C and Cr horizons

*Reaction:* Very strongly acid to moderately acid throughout the profile in unlimed areas

*Ap horizon (if it occurs):*

Hue—7.5YR to 2.5Y

Value—3 or 4

Chroma—2 to 4

Texture—loam

*A horizon:*

Hue—7.5YR to 2.5Y

Value—3 or 4

Chroma—2 to 4

Texture—loam

*E horizon (if it occurs):*

Hue—7.5YR or 10YR

Value—4 to 6

Chroma—3 to 6

Texture—loam or silt loam

*Bt horizon:*

Hue—5YR to 10YR

Value—5 or 6

Chroma—4 to 8

Texture—loam, silt loam, clay loam, or silty clay loam in the fine-earth fraction

*C horizon:*

Hue—2.5YR to 10YR

Value—4 to 8

Chroma—1 to 8

Texture—sandy loam, loam, or silt loam in the fine-earth fraction

*Cr horizon:*

Hue—2.5YR to 10YR

Value—4 to 8

Chroma—1 to 8

Texture—slightly weathered gabbro that crushes to sandy loam, loam, or silt loam in the fine-earth fraction

### ***Suches Series***

*Depth class:* Very deep

*Drainage class:* Moderately well drained

*Permeability:* Moderate

*Physiographic province:* Piedmont

*Landform:* Flood plains

*Parent material:* Recent alluvium

*Slope range:* 0 to 2 percent

### Associated Soils

- The somewhat poorly drained Codorus soils, the well drained Colvard, Craigsville, and Delanco soils, the poorly drained Hatboro soils, and Udorthents

### Typical Pedon

Suches loam, 0 to 2 percent slopes, frequently flooded; 0.6 mile north (342 degrees) of the intersection of Highways VA-688 and VA-665, about 1.2 miles east (82 degrees) of the intersection of Highways US-29 and VA-665, in woodland:

- Ap—0 to 11 inches; brown (7.5YR 4/4) loam; weak fine granular structure; very friable, slightly sticky; many fine and medium roots; many fine flakes of mica; strongly acid; abrupt smooth boundary.
- Bw1—11 to 23 inches; strong brown (7.5YR 4/6) loam; weak fine and medium subangular blocky structure; friable, slightly sticky, slightly plastic; few fine roots; 2 percent gravel; many fine flakes of mica; strongly acid; gradual smooth boundary.
- Bw2—23 to 30 inches; dark brown (10YR 4/3) clay loam; weak coarse platy structure parting to weak fine angular blocky; friable, slightly sticky, slightly plastic; few fine roots; common fine flakes of mica; strongly acid; abrupt wavy boundary.
- Bw3—30 to 43 inches; yellowish brown (10YR 4/6) sandy clay loam; weak fine and medium subangular blocky structure; friable, slightly sticky, slightly plastic; few fine roots; common fine flakes of mica; strongly acid; diffuse smooth boundary.
- C—43 to 61 inches; yellowish brown (10YR 5/6) and light brownish gray (10YR 6/2) sandy loam; single grain; friable; common fine flakes of mica; strongly acid.

### Range in Characteristics

*Thickness of the solum:* 40 to 60 inches

*Depth to bedrock:* 60 inches or more

*Rock fragments:* 0 to 15 percent throughout the profile

*Reaction:* Very strongly acid to moderately acid throughout the profile in unlimed areas

*Ap horizon:*

Hue—7.5YR or 10YR

Value—4 to 6

Chroma—2 to 4

Texture—loam

*A horizon (if it occurs):*

Hue—7.5YR or 10YR

Value—4 to 6

Chroma—2 to 4

Texture—loam

*Bw horizon:*

Hue—7.5YR or 10YR

Value—3 to 7

Chroma—3 to 8

Texture—fine sandy loam, loam, sandy clay loam, clay loam, or silty clay loam

*C horizon:*

Hue—7.5YR or 10YR

Value—3 to 7

Chroma—3 to 8

Texture—loamy sand, sandy loam, fine sandy loam, sandy clay loam, silt loam, or clay loam

## Sylco Series

*Depth class:* Moderately deep

*Drainage class:* Well drained

*Permeability:* Moderate

*Physiographic province:* Blue Ridge

*Landform:* Mountain ridges

*Parent material:* Phyllite, siltstone, and slate residuum

*Slope range:* 7 to 55 percent

### Associated Soils

- The shallow Sylvatus soils

### Typical Pedon

Sylco channery silt loam in an area of Sylco-Sylvatus complex, 15 to 35 percent slopes, extremely stony; 0.4 mile southeast (146 degrees) of the intersection of Highways VA-56 and VA-686, about 0.9 mile east (110 degrees) of the intersection of Highway VA-603 and the Blue Ridge Parkway, in woodland:

Oi—1 inch to 0; undecomposed and partially decomposed leaves, twigs, and needles.

A—0 to 3 inches; dark yellowish brown (10YR 4/4) channery silt loam; weak fine granular structure; friable, slightly sticky; many fine, medium, and coarse roots; 30 percent channers; very strongly acid; abrupt smooth boundary.

Bw1—3 to 25 inches; yellowish brown (10YR 5/6) very channery silty clay loam; weak medium granular structure; friable, slightly sticky, slightly plastic; common fine and medium roots; 38 percent channers; common fine distinct strong brown (7.5YR 5/8) and pale yellow (2.5Y 7/4) lithochromic masses; very strongly acid; clear wavy boundary.

Bw2—25 to 34 inches; yellowish brown (10YR 5/6)

very channery clay loam; weak medium subangular blocky structure; friable, slightly sticky, slightly plastic; few fine and medium roots; 38 percent channers; common fine distinct strong brown (7.5YR 5/6) and pale yellow (2.5Y 7/4) lithochromic masses; very strongly acid; clear wavy boundary.

Cr—34 to 38 inches; slightly weathered soft phyllite bedrock that crushes to yellowish brown (10YR 5/6) extremely channery loam.

R—38 inches; hard phyllite bedrock.

### Range in Characteristics

*Thickness of the solum:* 20 to 40 inches

*Depth to bedrock:* 20 to 40 inches

*Rock fragments:* 15 to 35 percent in the A and Bw horizons; 40 to 70 percent in the Cr horizon

*Reaction:* Very strongly acid or strongly acid throughout the profile in unlimed areas

#### A horizon:

Hue—10YR

Value—3 or 4

Chroma—2 to 4

Texture—silt loam in the fine-earth fraction

#### Bw horizon:

Hue—7.5YR or 10YR

Value—3 to 5

Chroma—3 to 8

Texture—silt loam, clay loam, or silty clay loam in the fine-earth fraction

#### Cr horizon:

Hue—7.5YR to 2.5Y

Value—3 to 5

Chroma—3 to 8

Texture—slightly weathered phyllite that crushes to loam or silt loam in the fine-earth fraction

## Sylvatus Series

*Depth class:* Shallow

*Drainage class:* Well drained

*Permeability:* Moderate

*Physiographic province:* Blue Ridge

*Landform:* Mountain ridges

*Parent material:* Phyllite, siltstone, and slate residuum

*Slope range:* 7 to 75 percent

### Associated Soils

- The moderately deep Sylco soils

### Typical Pedon

Sylvatus very channery silt loam in an area of Sylco-

Sylvatus complex, 35 to 55 percent slopes, extremely stony; 1.3 miles east (76 degrees) of the intersection of Highways VA-685 and VA-686, about 1.7 miles northeast (46 degrees) of the intersection of Highways VA-686 and VA-687, in woodland:

Oi—1 inch to 0; undecomposed and partially decomposed leaves and twigs.

A—0 to 1 inch; yellowish brown (10YR 5/4) very channery silt loam; weak fine granular structure; friable, slightly sticky; many fine, medium, and coarse roots; 40 percent channers; very strongly acid; abrupt smooth boundary.

Bw1—1 to 9 inches; yellowish brown (10YR 5/8) very channery silty clay loam; weak fine granular structure; friable, slightly sticky, slightly plastic; many fine, medium, and coarse roots; 45 percent channers; very strongly acid; clear smooth boundary.

Bw2—9 to 15 inches; yellowish brown (10YR 5/6) extremely channery clay loam; weak fine subangular blocky structure; friable, slightly sticky, slightly plastic; common fine, medium, and coarse roots; 65 percent channers; very strongly acid; abrupt smooth boundary.

Cr—15 to 19 inches; slightly weathered soft phyllite bedrock that crushes to yellowish brown (10YR 5/8) extremely channery silt loam; few fine and medium roots in cracks; abrupt wavy boundary.

R—19 inches; hard, fractured phyllite bedrock.

### Range in Characteristics

*Thickness of the solum:* 10 to 18 inches

*Depth to bedrock:* 10 to 20 inches

*Rock fragments:* 35 to 55 percent in the A horizon; 25 to 80 percent in the Bw horizon; 45 to 90 percent in the C horizon

*Reaction:* Extremely acid or very strongly acid throughout the profile in unlimed areas

#### A horizon:

Hue—10YR

Value—2 to 5

Chroma—1 to 4

Texture—silt loam in the fine-earth fraction

#### Bw horizon:

Hue—7.5YR or 10YR

Value—5 or 6

Chroma—4 to 8

Texture—silt loam, loam, clay loam, or silty clay loam in the fine-earth fraction

#### C horizon:

Hue—5YR to 10YR

Value—3 to 6

Chroma—1 to 8

Texture—slightly weathered phyllite that crushes to loam or silt loam in the fine-earth fraction

### **Thurmont Series**

*Depth class:* Very deep

*Drainage class:* Well drained

*Permeability:* Moderate

*Physiographic province:* Blue Ridge and Piedmont

*Landform:* Upland benches and fans

*Parent material:* Colluvium and local alluvium

*Slope range:* 2 to 25 percent

#### **Associated Soils**

- The somewhat poorly drained Belvoir soils that have a fragipan and Saunook soils that have a dark surface layer

#### **Typical Pedon**

Thurmont loam, 2 to 7 percent slopes; 0.1 mile northeast (54 degrees) of the intersection of Highways VA-664 and VA-680, about 1.4 miles west (289 degrees) of the intersection of Highways VA-664 and VA-151, in woodland:

Ap—0 to 5 inches; dark brown (7.5YR 4/3) loam; moderate fine granular structure; very friable, slightly sticky, slightly plastic; many fine, medium, and coarse roots; 2 percent gravel; very strongly acid; clear wavy boundary.

Bt1—5 to 24 inches; strong brown (7.5YR 4/6) clay loam; moderate fine and medium subangular blocky structure; friable, slightly sticky, slightly plastic; many medium roots; common distinct clay films on faces of peds; strongly acid; clear wavy boundary.

Bt2—24 to 31 inches; strong brown (7.5YR 5/8) sandy clay loam; weak fine and medium subangular blocky structure; friable, slightly plastic; common fine and medium roots; few distinct clay films on faces of peds; strongly acid; clear wavy boundary.

BC—31 to 40 inches; strong brown (7.5YR 5/6) sandy loam; weak fine subangular blocky structure; friable; common fine and medium roots; strongly acid; abrupt smooth boundary.

2C—40 to 62 inches; 80 percent yellowish brown (10YR 5/6), 10 percent strong brown (7.5YR 5/8), and 10 percent brown (10YR 5/3) very cobbly loam; massive; friable; 50 percent cobbles, stones, and gravel; strongly acid.

#### **Range in Characteristics**

*Thickness of the solum:* 40 to 60 inches

*Depth to lithologic discontinuity:* 30 to 60 inches

*Depth to bedrock:* 60 inches or more

*Rock fragments:* 0 to 15 percent in the A, Ap, and E horizons; 0 to 35 percent in the Bt and BC horizons; 0 to 50 percent in the 2C horizon

*Surface stoniness:* 0 to 3 percent

*Reaction:* Very strongly acid or strongly acid throughout the profile in unlimed areas

*Ap horizon:*

Hue—7.5YR to 2.5Y

Value—3 to 5

Chroma—2 to 6

Texture—loam

*A horizon (if it occurs):*

Hue—7.5YR to 2.5Y

Value—3 to 5

Chroma—2 to 6

Texture—loam

*E horizon (if it occurs):*

Hue—7.5YR to 2.5Y

Value—3 to 5

Chroma—2 to 6

Texture—sandy loam, fine sandy loam, or loam in the fine-earth fraction

*Bt horizon:*

Hue—5YR or 7.5YR

Value—4 to 6

Chroma—4 to 8

Texture—loam, sandy clay loam, or clay loam in the fine-earth fraction

*BC horizon:*

Hue—5YR or 7.5YR

Value—4 to 6

Chroma—4 to 8

Texture—sandy loam, loam, or sandy clay loam in the fine-earth fraction

*2C horizon:*

Hue—2.5YR to 10YR

Value—2 to 8

Chroma—1 to 7

Texture—sandy loam, loam, sandy clay loam, clay loam, or clay

### **Udorthents**

*Depth class:* Shallow to very deep

*Drainage class:* Moderately well drained and well drained

*Permeability:* Slow to rapid

*Physiographic province:* Piedmont and Blue Ridge

*Landform:* Variable

*Parent material:* Variable

*Slope range:* 2 to 60 percent

### Associated Soils

- The well drained Hayesville soils that have a clay subsoil and the moderately well drained Suches soils on flood plains

### Typical Pedon

Because of the variability of these soils, a typical pedon is not given. Excavation or filling has destroyed all discernible diagnostic horizons.

### Range in Characteristics

*Depth to bedrock:* 10 to more than 72 inches

*Rock fragments:* 0 to 90 percent

*Reaction:* Extremely acid to slightly acid throughout the profile in unlimed areas

#### A horizon:

Hue—2.5YR to 2.5Y

Value—4 to 8

Chroma—3 to 8

Texture—loamy sand to clay in the fine-earth fraction

#### C horizon:

Hue—horizon has hue of 2.5YR to 5Y or is neutral in hue

Value—3 to 8

Chroma—3 to 8

Texture—loamy sand to clay in the fine-earth fraction

## Unison Series

*Depth class:* Very deep

*Drainage class:* Well drained

*Permeability:* Moderate

*Physiographic province:* Piedmont

*Landform:* Upland benches and high stream terraces

*Parent material:* Colluvium and alluvium

*Slope range:* 2 to 25 percent

### Associated Soils

- Wintergreen soils that have a subsoil of red clay

### Typical Pedon

Unison loam, 7 to 15 percent slopes; 1.3 miles west (274 degrees) of the intersection of Highways VA-151 and VA-613, about 1.2 miles north (350 degrees) of the intersection of Highways VA-151 and VA-634, in woodland:

Ap—0 to 3 inches; brown (10YR 4/4) loam; moderate

fine granular structure; friable, slightly sticky, slightly plastic; few fine roots; 2 percent gravel; moderately acid; abrupt smooth boundary.

Bt1—3 to 27 inches; strong brown (7.5YR 4/6) silty clay loam; moderate fine and medium subangular blocky structure; firm, sticky, plastic; few fine roots; common distinct clay films on faces of peds; 5 percent gravel; strongly acid; clear smooth boundary.

Bt2—27 to 44 inches; strong brown (7.5YR 5/8) clay loam; moderate medium subangular blocky structure; firm, sticky, plastic; few fine roots; common distinct clay films on faces of peds; 12 percent gravel and cobbles; few fine flakes of mica; strongly acid; clear wavy boundary.

BC—44 to 48 inches; strong brown (7.5YR 5/8) cobbly loam; moderate medium subangular blocky structure; firm, sticky, plastic; few fine roots; common distinct clay films on faces of peds; 30 percent cobbles and gravel; few fine flakes of mica; strongly acid; abrupt wavy boundary.

2C—48 to 62 inches; red (2.5YR 4/6), light brown (7.5YR 6/4), and strong brown (7.5YR 5/6) silty clay; massive; firm, slightly sticky, slightly plastic; few distinct clay films on faces of peds; strongly acid.

### Range in Characteristics

*Thickness of the solum:* 30 to 60 inches

*Depth to bedrock:* 60 inches or more

*Rock fragments:* 0 to 15 percent in the A, Ap, and E horizons; 0 to 35 percent in the Bt horizon; 0 to 75 percent in the C horizon

*Reaction:* Very strongly acid to moderately acid throughout the profile in unlimed areas

#### Ap horizon:

Hue—7.5YR or 10YR

Value—4 or 5

Chroma—3 to 6

Texture—loam

#### A horizon (if it occurs):

Hue—7.5YR or 10YR

Value—4 or 5

Chroma—3 or 4

Texture—loam

#### E horizon (if it occurs):

Hue—7.5YR or 10YR

Value—4 or 5

Chroma—3 to 6

Texture—fine sandy loam, loam, or silt loam

#### Bt horizon:

Hue—5YR to 10YR

Value—4 or 5

Chroma—3 to 8

Texture—clay loam, silty clay loam, silty clay, or clay in the fine-earth fraction

*C horizon (if it occurs):*

Hue—2.5YR to 7.5YR

Value—4 to 8

Chroma—3 to 6

Texture—loam, silt loam, clay loam, or silty clay loam in the fine-earth fraction

*2C horizon:*

Hue—2.5YR to 7.5YR

Value—4 to 8

Chroma—3 to 6

Texture—loam, silt loam, clay loam, silty clay loam, silty clay, or clay in the fine-earth fraction

## Warminster Series

*Depth class:* Deep

*Drainage class:* Well drained

*Permeability:* Moderate

*Physiographic province:* Piedmont

*Landform:* Uplands

*Parent material:* Triassic red shale residuum

*Slope range:* 2 to 25 percent

### Associated Soils

- Arcola soils that have less clay in the subsoil than the Warminster soils and Buffstat and Littlejoe soils that formed from sericite schist

### Typical Pedon

Warminster clay loam, 2 to 7 percent slopes; 2.1 miles east (76 degrees) from the intersection of Highways VA-604 and VA-626, about 1.9 miles south (200 degrees) of the intersection of Highways VA-644 and VA-626, in pasture:

Ap—0 to 8 inches; yellowish red (5YR 5/6) clay loam; moderate medium granular structure; friable, slightly sticky, slightly plastic; many fine and medium roots; 2 percent gravel; slightly acid; clear smooth boundary.

Bt1—8 to 38 inches; red (2.5YR 4/6) clay; moderate fine and medium subangular blocky structure; firm, sticky, plastic; few fine and medium roots; many distinct clay films on faces of peds; 2 percent gravel; moderately acid; clear smooth boundary.

Bt2—38 to 45 inches; red (2.5YR 4/8) clay; moderate fine subangular blocky structure; firm, sticky, plastic; few fine roots; few distinct clay films on

faces of peds; 5 percent gravel; strongly acid; clear smooth boundary.

C—45 to 55 inches; red (2.5YR 4/8) clay loam; massive; friable, sticky, plastic; few fine roots; 5 percent gravel; few fine flakes of mica; strongly acid; clear smooth boundary.

Cr—55 to 72 inches; slightly weathered soft red shale bedrock that crushes to red (2.5YR 4/6) silt loam.

### Range in Characteristics

*Thickness of the solum:* 35 to 60 inches

*Depth to soft bedrock:* 40 to 60 inches

*Depth to hard bedrock:* 72 inches or more

*Rock fragments:* 0 to 15 percent in the A and Ap horizons and the upper part of the Bt horizon; 2 to 35 percent in the lower part of the Bt horizon; 5 to 60 percent in the C and Cr horizons

*Reaction:* Very strongly acid to moderately acid in unlimed areas

*Ap horizon:*

Hue—2.5YR to 7.5YR

Value—4 or 5

Chroma—4 to 6

Texture—clay loam

*A horizon (if it occurs):*

Hue—2.5YR to 7.5YR

Value—3 to 5

Chroma—3 to 6

Texture—silt loam or loam

*Bt horizon:*

Hue—10R to 5YR

Value—3 or 4

Chroma—4 to 8

Texture—silty clay loam, silty clay, or clay in the fine-earth fraction; average of more than 30 percent silt in the particle-size control section

*C horizon:*

Hue—10R to 2.5YR

Value—3 or 4

Chroma—4 to 8

Texture—silt loam, silty clay loam, or clay loam in the fine-earth fraction

*Cr horizon:*

Hue—10R to 7.5YR

Value—3 to 6

Chroma—2 to 8

Texture—slightly weathered red shale that crushes to silt loam, silty clay loam, clay loam, or clay in the fine-earth fraction

## Wingina Series

*Depth class:* Very deep

*Drainage class:* Well drained

*Permeability:* Moderately rapid

*Physiographic province:* Piedmont

*Landform:* Flood plains

*Parent material:* Recent alluvium

*Slope range:* 0 to 2 percent

### Associated Soils

- The well drained Galtmill soils, the moderately well drained Batteau soils, and the poorly drained Yogaville soils

### Typical Pedon

Wingina loam, 0 to 2 percent slopes, occasionally flooded; 2,200 feet east (80 degrees) of the junction of Highways VA-56 and VA-647, about 12,400 feet southeast (138 degrees) of the junction of Highways VA-56 and VA-626, in corn stubble:

- Ap—0 to 9 inches; very dark grayish brown (10YR 3/2 broken) and dark brown (10YR 3/3 crushed) loam, yellowish brown (10YR 5/4) dry; weak fine granular structure; friable, slightly sticky; common fine and medium roots; few fine flakes of mica; slightly acid; abrupt smooth boundary.
- A—9 to 23 inches; dark brown (10YR 3/3) loam; weak fine granular structure; friable, slightly plastic; few fine roots; common fine flakes of mica; slightly acid; abrupt smooth boundary.
- Bw1—23 to 40 inches; brown (10YR 4/3) loam; weak fine subangular blocky structure; friable; few fine roots; common fine flakes of mica; slightly acid; clear smooth boundary.
- Bw2—40 to 65 inches; brown (10YR 4/3) fine sandy loam; weak fine subangular blocky structure; friable; few fine roots; few fine flakes of mica; slightly acid; clear smooth boundary.
- C—65 to 72 inches; dark yellowish brown (10YR 4/6) loamy sand; single grain; very friable; few fine roots; few fine flakes of mica; slightly acid.

### Range in Characteristics

*Thickness of the solum:* 30 to 60 inches or more

*Depth to bedrock:* 60 inches or more

*Rock fragments:* 0 to 15 percent throughout the profile

*Reaction:* Strongly acid to neutral throughout the profile

*Ap horizon:*

Hue—7.5YR or 10YR

Value—3 moist, 3 to 5 dry

Chroma—2 or 3

Texture—loam

*Bw horizon:*

Hue—7.5YR or 10YR

Value—3 to 5

Chroma—3 or 4

Texture—sandy loam, fine sandy loam, loam, or silt loam

*C horizon:*

Hue—7.5YR or 10YR

Value—4 or 5

Chroma—3 to 8

Texture—sand, loamy sand, fine sandy loam, or sandy loam; stratified in some pedons

## Wintergreen Series

*Depth class:* Very deep

*Drainage class:* Well drained

*Permeability:* Moderate

*Physiographic province:* Blue Ridge and Piedmont

*Landform:* Upland benches and high stream terraces

*Parent material:* Colluvium and alluvium

*Slope range:* 2 to 25 percent

### Associated Soils

- The well drained Hayesville soils that formed from biotite gneiss, the well drained Littlejoe soils that formed from sericite schist, and the well drained Unison soils that have a yellowish brown to yellowish red subsoil

### Typical Pedon

Wintergreen loam, 2 to 7 percent slopes; 0.5 mile east (80 degrees) of the intersection of Highways VA-668 and VA-653, about 0.9 mile northwest (300 degrees) of the intersection of Highways VA-653 and VA-650, in woodland:

- A—0 to 3 inches; dark brown (7.5YR 4/4) loam; weak fine granular structure; friable, slightly sticky; many fine, medium, and coarse roots; very strongly acid; abrupt wavy boundary.
- E—3 to 7 inches; yellowish red (7.5YR 4/6) loam; weak fine subangular blocky structure; friable; common fine, medium, and coarse roots; very strongly acid; clear smooth boundary.
- Bt1—7 to 24 inches; red (2.5YR 4/6) clay; moderate fine subangular blocky structure; friable, sticky, plastic; few fine and medium roots; many distinct clay films on faces of peds; very strongly acid; clear smooth boundary.

Bt2—24 to 35 inches; red (2.5YR 4/6) clay; weak medium subangular blocky structure; firm, sticky, plastic; few fine roots; many distinct clay films on faces of peds; very strongly acid; clear smooth boundary.

Bt3—35 to 62 inches; 70 percent red (2.5YR 4/6), 15 percent strong brown (7.5YR 5/8), and 15 percent pinkish white (7.5YR 8/2) clay; weak coarse platy structure parting to weak medium subangular blocky; firm, sticky, plastic; common distinct clay films on faces of peds; very strongly acid.

### Range in Characteristics

*Thickness of the solum:* 40 to 60 inches or more

*Depth to bedrock:* 60 inches or more

*Rock fragments:* 0 to 35 percent in the A, Ap, and E horizons and the upper part of the Bt horizon; 0 to 60 percent in the lower part of the Bt horizon; variable in the C horizon

*Surface stoniness:* 0 to 3 percent

*Reaction:* Extremely acid to strongly acid throughout the profile in unlimed areas

*Ap horizon (if it occurs):*

Hue—7.5YR or 10YR

Value—2 to 5

Chroma—1 to 6

Texture—loam in the fine-earth fraction; clay loam in eroded areas

*A horizon:*

Hue—7.5YR or 10YR

Value—2 to 4

Chroma—1 to 6

Texture—loam in the fine-earth fraction

*E horizon (if it occurs):*

Hue—7.5YR or 10YR

Value—4 to 6

Chroma—3 to 8

Texture—sandy loam, fine sandy loam, or loam in the fine-earth fraction

*Bt horizon:*

Hue—10R or 2.5YR

Value—3 to 5; 3 only occurring in individual subhorizons

Chroma—6 or 8

Texture—clay loam, sandy clay, or clay in the fine-earth fraction

*C horizon (if it occurs):*

Hue—10R to 7.5YR

Value—3 to 8

Chroma—1 to 8

Texture—sandy loam, loam, sandy clay loam, clay

loam, silty clay loam, clay, or sandy clay in the fine-earth fraction

*2C horizon (if it occurs):*

Hue—10R to 7.5YR

Value—3 to 8

Chroma—1 to 8

Texture—sandy loam, loam, sandy clay loam, clay loam, silty clay loam, clay, or sandy clay in the fine-earth fraction

## Yogaville Series

*Depth class:* Very deep

*Drainage class:* Poorly drained

*Permeability:* Moderate

*Physiographic province:* Piedmont

*Landform:* Flood plains

*Parent material:* Recent alluvium

*Slope range:* 0 to 2 percent

### Associated Soils

- The well drained Wingina and Galtmill soils, the moderately well drained Batteau soils, and the poorly drained Hatboro soils

### Typical Pedon

Yogaville loam, 0 to 2 percent slopes, occasionally flooded; 1,100 feet east-northeast (70 degrees) of the junction of Highways VA-56 and VA-647, about 11,700 feet southeast (143 degrees) of the junction of Highways VA-56 and VA-626, in a hayfield:

Ap—0 to 7 inches; dark brown (10YR 3/3) loam, brown (10YR 5/3) dry; moderate medium granular structure; friable, slightly sticky, slightly plastic; few fine and medium roots; few fine flakes of mica; neutral; clear smooth boundary.

A—7 to 20 inches; very dark grayish brown (10YR 3/2) loam; weak medium granular structure; friable, slightly sticky, slightly plastic; few fine roots; few fine flakes of mica; few fine distinct irregular dark yellowish brown (10YR 4/6) iron and manganese masses; neutral; abrupt smooth boundary.

Bg1—20 to 42 inches; dark grayish brown (2.5Y 4/2) clay loam; weak medium subangular blocky structure; friable, slightly sticky, slightly plastic; few fine flakes of mica; common fine distinct irregular dark yellowish brown (10YR 4/6) iron and manganese masses; slightly acid; clear smooth boundary.

Bg2—42 to 50 inches; gray (N 5/0) clay loam; weak medium subangular blocky structure; friable, slightly sticky, slightly plastic; few fine flakes of

mica; common fine distinct irregular dark yellowish brown (10YR 4/6) and strong brown (7.5YR 4/6) iron and manganese masses; slightly acid; clear smooth boundary.

C—50 to 72 inches; 60 percent dark gray (10YR 4/1), 25 percent grayish brown (10YR 5/2), and 15 percent very dark gray (N 3/0) clay loam; massive; friable, slightly sticky, slightly plastic; few fine flakes of mica; common fine and medium strong brown (7.5YR 5/8) iron and manganese masses; slightly acid.

### **Range in Characteristics**

*Thickness of the solum:* 30 to 60 inches or more

*Depth to bedrock:* 60 inches or more

*Rock fragments:* 0 to 15 percent throughout the profile

*Reaction:* Strongly acid to neutral

*Ap horizon:*

Hue—10YR to 5Y

Value—3 moist, 3 to 5 dry

Chroma—2 or 3

Texture—loam

*A horizon (if it occurs):*

Hue—10YR

Value—3 moist, 3 to 5 dry

Chroma—2 or 3

Texture—loam

*Bg horizon:*

Hue—horizon has hue of 10YR to 5Y or is neutral in hue

Value—4 to 6

Chroma—0 to 2

Texture—sandy loam, fine sandy loam, loam, silt loam, clay loam, or silty clay loam; subhorizons of silt loam and silty clay loam occur in some pedons

*Cg horizon:*

Hue—horizon has hue of 10YR to 5Y or is neutral in hue

Value—4 to 7

Chroma—0 to 2

Texture—sand, loamy sand, sandy loam, or fine sandy loam

# Formation of the Soils

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This section describes the factors of soil formation as they relate to the soils of Nelson County and explains the major processes of soil horizon development (fig. 11).

## Factors of Soil Formation

The five major factors of soil formation are parent material, topography, climate, living organisms, and time. Topography and parent material are modified over time by the active forces of climate and living organisms.

### Parent Material

Parent material is the unconsolidated material in which a soil forms. In Nelson County, parent materials are residual or transported material. Table 22 provides a summary of geologic relations to the soils in the survey area (3).

Residual parent material has weathered in place from the underlying bedrock. Properties of the residual parent material are directly related to the characteristics of the underlying bedrock. Hayesville and Elioak soils formed in residuum.

Transported parent material consists of alluvial sediments and colluvial sediments. The alluvial sediments were moved by water and were deposited as mixtures or layers of rock fragments, sand, silt, and clay. They are on flood plains and terraces. Craigsville, Galtsmill, Hatboro, and Yogaville soils formed in recent alluvium on flood plains. Delanco and Elsinboro soils formed in alluvial sediments on terraces. The colluvial sediments were moved by gravity, with water acting as the lubricant. They are on fans at the base of mountains, at the head of drainageways, in depressions, and on foot slopes. Belvoir, Chatuge, Lew, Saunook, Thurmont, Unison, and Wintergreen soils formed in colluvium.

Igneous and metamorphic rocks are the two primary types of rock in the county. Sedimentary rocks occur in small areas between Wingina and Howardsville. Igneous rocks formed from the cooling of molten rock material. Examples of igneous rocks in the county are granite, gabbro, diorite, and

anorthosite. Sedimentary rocks in the survey area are composed predominantly of silicate minerals, such as quartz or clay. Examples of these rocks are sandstone, shale, and conglomerate. These rocks were formed by sediments deposited during the Triassic Period. Metamorphic rocks are igneous or sedimentary rocks that have been altered by heat and pressure. Granite gneiss, mica schist, biotite gneiss, phyllite, and greenstone are examples of metamorphic rock in Nelson County.

Igneous and metamorphic rocks are subdivided into acidic and basic rock types. The subdivision is based on the nature and amount of specific minerals in the rocks. Basic rocks are generally richer in calcium and magnesium than acidic rocks. Soils that formed from acidic rocks, such as granite, granite gneiss, biotite gneiss, mica schist, and phyllite, are Hayesville and Elioak soils. Catoctin and Myersville soils formed from basic rocks, such as greenstone.

### Topography

Topography affects the formation of soils by influencing the rate of water infiltration, the rate of surface runoff, soil drainage, geologic erosion, and soil temperature. It can alter the effects of the other soil-forming factors to the extent that several different kinds of soil can form from the same parent material. Differences in topography can cause the same parent material to weather at different rates, thus affecting the impact of plants and animals on soil formation.

Physiographically, approximately 60 percent of Nelson County is within the Piedmont and 40 percent is within the Blue Ridge. The elevation of the county ranges from about 300 to 1,200 feet above sea level in the Piedmont and from about 1,200 to 4,063 feet in the Blue Ridge. The gradient of the Piedmont upland is about 40 to 50 feet per mile, and the gradient of the Blue Ridge is about 400 to 2,000 feet per mile. Stream gradients in the survey area are generally about 10 to 20 feet per mile.

The Piedmont generally consists of gently sloping and strongly sloping, intermediate to broad ridge summits and steep and very steep side slopes. The Blue Ridge has strongly sloping and moderately steep,

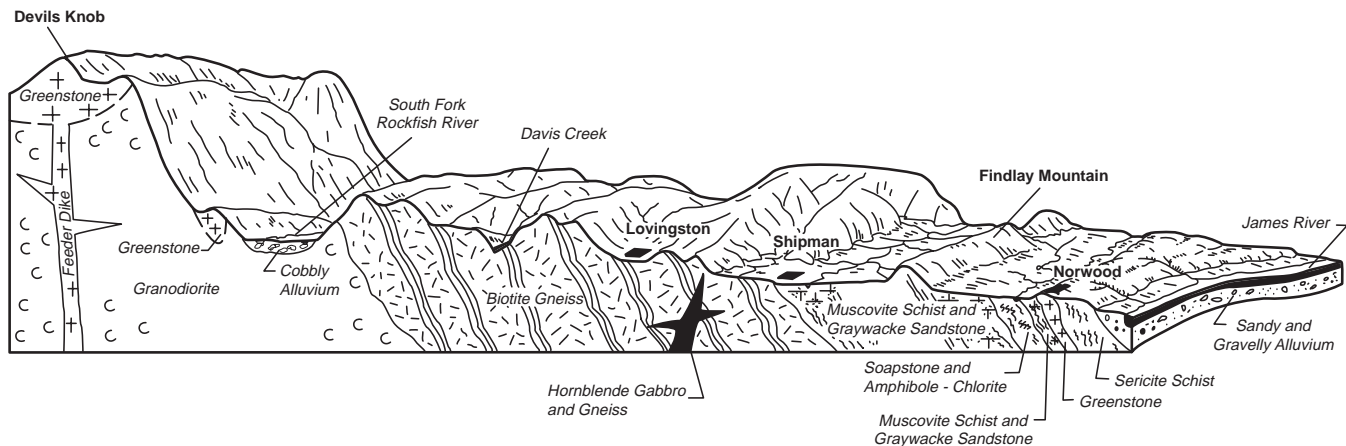


Figure 11.—Cross section of the typical landforms and rock patterns in Nelson County.

broad, dome-shaped to narrow ridge summits and steep and very steep side slopes. The soils in both areas are mostly well drained and have a loamy or clayey subsoil. The gently sloping and strongly sloping areas have medium or rapid rates of runoff and a good rate of water infiltration. The steep and very steep areas commonly have a very rapid rate of runoff and a poor rate of water infiltration. The steeper soils have less development in the subsoil than the less sloping soils.

## Climate

Climate determines, to a large extent, the rate and degree of weathering of the parent material. It also determines the kind and amount of biological activity and influences the type of weathering, chemical or physical, that parent material undergoes.

Chemical weathering of parent material occurs more rapidly under a warm, humid climate, such as that of Nelson County, than under a cold, dry climate. Physical weathering is more pronounced under the colder, dryer climates. Although landscape position and slope modify the influence of climate, their effects do not account for major differences among the soils of the survey area. The amount of precipitation and the movement of the water through the soil greatly affect the translocation of clays and the movement of minerals out of the zone of biological activity. The climate of the Piedmont causes rapid weathering of parent material and thus promotes the movement of clays and minerals. The climate of the Blue Ridge is less conducive to the translocation of clays and leaching of minerals because of lower temperatures but is more conducive to continued physical weathering. Weathering, translocation of clays, and

leaching of minerals take place most of the year. The relative influence of each on the soil determines the main characteristics of the soil.

## Living Organisms

Plants are the main source of organic matter in the soils. Organic matter decomposes and is incorporated into the soil by the action of micro-organisms and earthworms and, to a lesser degree, by windthrown trees and burrowing animals.

The soils of the Blue Ridge have a higher content of organic matter than the soils of the Piedmont. In the Piedmont, the warm, humid climate, the adequate supply of moisture, and the abundance of micro-organisms prevent the accumulation of large amounts of organic matter. Earthworms, burrowing animals, and plant roots help to keep the soil aerated. Plant roots also help in soil formation by penetrating cracks and breaking up the underlying bedrock.

Cultivation, drainage, irrigation, use of new types of vegetation, applications of lime and fertilizer, and use of herbicides and pesticides are some of the ways that humans have influenced the rate of soil development in the survey area. In most of Nelson County, human influence has caused an increase in erosion.

## Time

Time is needed for changes to take place in the parent material. Because of the other soil-forming factors, however, soils that formed in the same type of parent material and for the same amount of time may not be equally developed. Runoff and erosion, which hinder the development of well expressed soil horizons, are greater on the steeper slopes. Thus,

soils on the steeper slopes generally are less developed than soils on the less steep slopes although they formed in the same parent material.

Soils that form in weather-resistant parent material do not develop as rapidly as soils that form in parent material that is less resistant to weathering. Soils on flood plains, such as Codorus and Colvard soils, commonly have weakly defined layers because they are subject to the constant deposition of sediment.

## **Processes of Soil Horizon Differentiation**

Several processes are involved in the formation of soil horizons. Among these are the accumulation of organic matter, the leaching of soluble salts, the reduction and transfer of iron, the formation of soil structure, and the formation and translocation of clay minerals. These processes occur continually and simultaneously. They have been taking place for thousands of years.

Organic matter accumulates as plant and animal material decomposes. It darkens the surface layer and helps to form the A horizon. Once organic matter is lost, it normally takes a long time to replace. In Nelson County, the content of organic matter in the surface layer of the soils averages about 2 percent.

Soils that have distinct subsoil horizons were leached of some of the lime and soluble salts before the clay minerals moved downward. Some of the factors that affect this leaching are the kinds of salts originally present, the depth to which the soil solution

percolates, and the texture of the soil profile. In Nelson County, well drained and moderately well drained soils have a yellowish brown to red subsoil. These colors are caused mainly by thin coatings of iron oxide on sand and silt grains, but in some soils the colors are inherited from the materials in which the soils formed.

The structure in the soils of Nelson County is weak to strong subangular blocky, and the subsoil contains more clay than the surface layer. A fragipan has developed in the subsoil of the somewhat poorly and moderately well drained Belvoir soils. The fragipan is very firm and brittle when moist and very hard when dry. The soil particles are packed so tightly that the bulk density is high and the pore space is low. The fragipan may be the result of the shrinking and swelling of soil that occurs in alternating wet and dry periods. This process may explain the packing of the soil particles and the gross polygonal pattern of cracks in the cementing agents, which cause the brittleness and hardness.

The reduction and transfer of iron, called gleying, are associated mainly with wet, poorly drained soils, such as Chatuge and Hatboro soils. In these soils, the subsoil and underlying material are gray, indicating redoximorphic depletions and the transfer of iron in solution. Moderately well drained and somewhat poorly drained soils have redoximorphic depletions and redoximorphic accumulations of red, yellowish red, and yellowish brown. Redoximorphic accumulations, in the form of soft masses or hard concretions or nodules, indicate the segregation of iron due to a fluctuating water table.



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# Glossary

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**ABC soil.** A soil having an A, a B, and a C horizon.

**AC soil.** A soil having only an A and a C horizon.

Commonly, such soil formed in recent alluvium or on steep, rocky slopes.

**Aeration, soil.** The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

**Aggregate, soil.** Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

**Alluvial fan.** The fanlike deposit of a stream where it issues from a gorge upon a plain or of a tributary stream near or at its junction with its main stream.

**Alluvium.** Material, such as sand, silt, or clay, deposited on land by streams.

**Animal unit month (AUM).** The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

**Aquic conditions.** Current soil wetness characterized by saturation, reduction, and redoximorphic features.

**Area reclaim** (in tables). An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

**Argillic horizon.** A subsoil horizon characterized by an accumulation of illuvial clay.

**Aspect.** The direction in which a slope faces.

**Available water capacity (available moisture capacity).** The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low .....	0 to 3
Low .....	3 to 6
Moderate .....	6 to 9

High ..... 9 to 12

Very high ..... more than 12

**Back slope.** The geomorphic component that forms the steepest inclined surface and principal element of many hillsides. Back slopes in profile are commonly steep, are linear, and may or may not include cliff segments.

**Basal area.** The area of a cross section of a tree, generally referring to the section at breast height and measured outside the bark. It is a measure of stand density, commonly expressed in square feet.

**Base saturation.** The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

**Bedding system.** A drainage system made by plowing, grading, or otherwise shaping the surface of a flat field. It consists of a series of low ridges separated by shallow, parallel dead furrows.

**Bedrock.** The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

**Bedrock-controlled topography.** A landscape where the configuration and relief of the landforms are determined or strongly influenced by the underlying bedrock.

**Bench terrace.** A raised, level or nearly level strip of earth constructed on or nearly on a contour, supported by a barrier of rocks or similar material, and designed to make the soil suitable for tillage and to prevent accelerated erosion.

**Bisequum.** Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons.

**Board foot.** A unit of measure of the wood in lumber, logs, or trees. The amount of wood in a board 1 foot wide, 1 foot long, and 1 inch thick before finishing.

**Bottom land.** The normal flood plain of a stream, subject to flooding.

**Boulders.** Rock fragments larger than 2 feet (60 centimeters) in diameter.

**Breast height.** An average height of 4.5 feet above the ground surface; the point on a tree where diameter measurements are ordinarily taken.

**Brush management.** Use of mechanical, chemical, or biological methods to make conditions favorable for reseeding or to reduce or eliminate competition from woody vegetation and thus allow understory grasses and forbs to recover. Brush management increases forage production and thus reduces the hazard of erosion. It can improve the habitat for some species of wildlife.

**Cable yarding.** A method of moving felled trees to a nearby central area for transport to a processing facility. Most cable yarding systems involve use of a drum, a pole, and wire cables in an arrangement similar to that of a rod and reel used for fishing. To reduce friction and soil disturbance, felled trees generally are reeled in while one end is lifted or the entire log is suspended.

**Calcareous soil.** A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

**California bearing ratio (CBR).** The load-supporting capacity of a soil as compared to that of standard crushed limestone, expressed as a ratio. First standardized in California. A soil having a CBR of 16 supports 16 percent of the load that would be supported by standard crushed limestone, per unit area, with the same degree of distortion.

**Canopy.** The leafy crown of trees or shrubs. (See Crown.)

**Capillary water.** Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

**Catena.** A sequence, or "chain," of soils on a landscape that formed in similar kinds of parent material but have different characteristics as a result of differences in relief and drainage.

**Cation.** An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

**Cation-exchange capacity.** The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

**Catsteps.** Very small, irregular terraces on steep hillsides, especially in pasture, formed by the trampling of cattle or the slippage of saturated soil.

**Cement rock.** Shaly limestone used in the manufacture of cement.

**Channeled.** Refers to a drainage area in which natural meandering or repeated branching and convergence of a streambed, either active or abandoned, have created deeply incised cuts in alluvial material.

**Channery soil material.** Soil material that is, by volume, 15 to 35 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches (15 centimeters) along the longest axis. A single piece is called a channer.

**Chiseling.** Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

**Clay.** As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

**Clay depletions.** Low-chroma zones having a low content of iron, manganese, and clay because of the chemical reduction of iron and manganese and the removal of iron, manganese, and clay. A type of redoximorphic depletion.

**Clayey soil.** Silty clay, sandy clay, or clay.

**Clay film.** A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

**Claypan.** A slowly permeable soil horizon that contains much more clay than the horizons above it. A claypan is commonly hard when dry and plastic or stiff when wet.

**Clearcut.** A method of forest harvesting that removes the entire stand of trees in one cutting. Reproduction is achieved artificially or by natural seeding from adjacent stands.

**Climax plant community.** The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

**Closed depression.** A low area completely surrounded by higher ground and having no natural outlet.

**Coarse fragments.** If round, mineral or rock particles 2 millimeters to 25 centimeters (10 inches) in diameter; if flat, mineral or rock particles (flagstone) 15 to 38 centimeters (6 to 15 inches) long.

**Coarse textured soil.** Sand or loamy sand.

**Cobble (or cobblestone).** A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

**Cobbly soil material.** Material that is 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material is 35 to 60 percent of these rock fragments, and extremely cobbly soil material is more than 60 percent.

**Codominant trees.** Trees whose crowns form the general level of the forest canopy and that receive full light from above but comparatively little from the sides.

**Colluvium.** Soil material or rock fragments, or both, moved by creep, slide, or local wash and deposited at the base of steep slopes.

**Commercial forest.** Forest land capable of producing 20 cubic feet or more per acre per year at the culmination of mean annual increment.

**Complex slope.** Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

**Complex, soil.** A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

**Concretions.** Cemented bodies with crude internal symmetry organized around a point, a line, or a plane that typically takes the form of concentric layers visible to the naked eye. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up concretions. If formed in place, concretions of iron oxide or manganese oxide are generally considered a type of redoximorphic concentration.

**Conglomerate.** A coarse-grained, clastic rock composed of rounded to subangular rock fragments more than 2 millimeters in diameter. It commonly has a matrix of sand and finer textured material. Conglomerate is the consolidated equivalent of gravel.

**Conservation cropping system.** Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops

of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

**Conservation tillage.** A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

**Consistence, soil.** Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the "Soil Survey Manual."

**Contour stripcropping.** Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

**Control section.** The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

**Corrosion.** Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

**Cover crop.** A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

**Cropping system.** Growing crops according to a planned system of rotation and management practices.

**Crop residue management.** Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

**Cross-slope farming.** Deliberately conducting farming operations on sloping farmland in such a way that tillage is across the general slope.

**Crown.** The upper part of a tree or shrub, including the living branches and their foliage.

**Cutbanks cave** (in tables). The walls of excavations tend to cave in or slough.

**Deep soil.** A soil that is 40 to 60 inches deep over bedrock or to other material that restricts the penetration of plant roots.

**Depth, soil.** Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep, 20 to 40 inches; shallow, 10 to 20 inches; and very shallow, less than 10 inches.

**Depth to rock** (in tables). Bedrock is too near the surface for the specified use.

**Dip slope.** A slope of the land surface, roughly determined by and approximately conforming to the dip of the underlying bedrock.

**Diversion (or diversion terrace).** A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

**Divided-slope farming.** A form of field stripcropping in which crops are grown in a systematic arrangement of two strips, or bands, across the slope to reduce the hazard of water erosion. One strip is in a close-growing crop that provides protection from erosion, and the other strip is in a crop that provides less protection from erosion. This practice is used where slopes are not long enough to permit a full stripcropping pattern to be used.

**Dominant trees.** Trees whose crowns form the general level of the forest canopy and that receive full light from above and from the sides.

**Drainage class (natural).** Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained, and very poorly drained*. These classes are defined in the “Soil Survey Manual.”

**Drainage, surface.** Runoff, or surface flow of water, from an area.

**Drainageway.** An area of land that is at a lower elevation than surrounding areas and where water collects and is drained to a closed depression or lake or to a drainageway at a lower elevation. A drainageway may or may not have distinctly incised channels at its upper reaches or throughout its course.

**Eluviation.** The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

**Endosaturation.** A type of saturation of the soil in which all horizons between the upper boundary of saturation and a depth of 2 meters are saturated.

**Eolian soil material.** Earthy parent material accumulated through wind action; commonly refers to sandy material in dunes or to loess in blankets on the surface.

**Ephemeral stream.** A stream, or reach of a stream,

that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times.

**Episaturation.** A type of saturation indicating a perched water table in a soil in which saturated layers are underlain by one or more unsaturated layers within 2 meters of the surface.

**Erosion.** The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

*Erosion (geologic).* Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

*Erosion (accelerated).* Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

**Erosion pavement.** A layer of gravel or stones that remains on the surface after fine particles are removed by sheet or rill erosion.

**Escarpment.** A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Synonym: scarp.

**Even aged.** Refers to a stand of trees in which only small differences in age occur between the individual trees. A range of 20 years is allowed.

**Excess fines** (in tables). Excess silt and clay in the soil. The soil does not provide a source of gravel or sand for construction purposes.

**Extrusive rock.** Igneous rock derived from deep-seated molten matter (magma) emplaced on the earth's surface.

**Fan terrace.** A relict alluvial fan, no longer a site of active deposition, incised by younger and lower alluvial surfaces.

**Fertility, soil.** The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

**Fibric soil material (peat).** The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

**Field moisture capacity.** The moisture content of a soil, expressed as a percentage of the oven-dry weight, after the gravitational, or free, water has

drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity*, *normal moisture capacity*, or *capillary capacity*.

**Fill slope.** A sloping surface consisting of excavated soil material from a road cut. It commonly is on the downhill side of the road.

**Fine textured soil.** Sandy clay, silty clay, or clay.

**Firebreak.** An area cleared of flammable material to stop or help control creeping or running fires. It also serves as a line from which to work and to facilitate the movement of fire fighters and equipment. Designated roads also serve as firebreaks.

**First bottom.** The normal flood plain of a stream, subject to frequent or occasional flooding.

**Flaggy soil material.** Material that is, by volume, 15 to 35 percent flagstones. Very flaggy soil material is 35 to 60 percent flagstones, and extremely flaggy soil material is more than 60 percent flagstones.

**Flagstone.** A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist 6 to 15 inches (15 to 38 centimeters) long.

**Flood plain.** A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

**Fluvial.** Of or pertaining to rivers; produced by river action, as a fluvial plain.

**Foothill.** A steeply sloping upland that has relief of as much as 1,000 feet (300 meters) and fringes a mountain range or high-plateau escarpment.

**Foot slope.** The inclined surface at the base of a hill.

**Forb.** Any herbaceous plant not a grass or a sedge.

**Forest cover.** All trees and other woody plants (underbrush) covering the ground in a forest.

**Forest type.** A stand of trees similar in composition and development because of given physical and biological factors by which it may be differentiated from other stands.

**Fragipan.** A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

**Frost action** (in tables). Freezing and thawing of soil moisture. Frost action can damage roads, buildings and other structures, and plant roots.

**Genesis, soil.** The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

**Gleyed soil.** Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

**Graded stripcropping.** Growing crops in strips that grade toward a protected waterway.

**Grassed waterway.** A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

**Gravel.** Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

**Gravelly soil material.** Material that is 15 to 50 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

**Green manure crop** (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

**Gypsum.** A mineral consisting of hydrous calcium sulfate.

**Hard bedrock.** Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

**Hardpan.** A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

**Head out.** To form a flower head.

**Hemic soil material (mucky peat).** Organic soil material intermediate in degree of decomposition between the less decomposed fibric material and the more decomposed sapric material.

**Hill.** A natural elevation of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline; hillsides generally have slopes of more than 15 percent. The distinction between a hill and a mountain is arbitrary and is dependent on local usage.

**Horizon, soil.** A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. The major horizons of mineral soil are as follows:

*O horizon.*—An organic layer of fresh and decaying plant residue.

*A horizon.*—The mineral horizon at or near the surface in which an accumulation of humified

organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

*E horizon.*—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

*B horizon.*—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

*C horizon.*—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

*Cr horizon.*—Soft, consolidated bedrock beneath the soil.

*R layer.*—Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

**Humus.** The well decomposed, more or less stable part of the organic matter in mineral soils.

**Hydrologic soil groups.** Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties are depth to a high water table, the infiltration rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

**Igneous rock.** Rock formed by solidification from a molten or partially molten state. Major varieties include plutonic and volcanic rock. Examples are andesite, basalt, and granite.

**Illuviation.** The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

**Impervious soil.** A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

**Infiltration.** The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

**Infiltration capacity.** The maximum rate at which water can infiltrate into a soil under a given set of conditions.

**Infiltration rate.** The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

**Intake rate.** The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Less than 0.2 .....	very low
0.2 to 0.4 .....	low
0.4 to 0.75 .....	moderately low
0.75 to 1.25 .....	moderate
1.25 to 1.75 .....	moderately high
1.75 to 2.5 .....	high
More than 2.5 .....	very high

**Intermittent stream.** A stream, or reach of a stream, that flows for prolonged periods only when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

**Iron depletions.** Low-chroma zones having a low content of iron and manganese oxide because of chemical reduction and removal but having a clay content similar to that of the adjacent matrix. A type of redoximorphic depletion.

**Irrigation.** Application of water to soils to assist in production of crops. Methods of irrigation are:  
**Basin.**—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

**Border.**—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

**Controlled flooding.**—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

**Corrugation.**—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

**Drip (or trickle).**—Water is applied slowly and

under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

**Furrow.**—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

**Sprinkler.**—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

**Subirrigation.**—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

**Wild flooding.**—Water, released at high points, is allowed to flow onto an area without controlled distribution.

**Karst** (topography). The relief of an area underlain by limestone that dissolves in differing degrees, thus forming numerous depressions or small basins.

**Knoll.** A small, low, rounded hill rising above adjacent landforms.

**Lacustrine deposit.** Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

**Landslide.** The rapid downhill movement of a mass of soil and loose rock, generally when wet or saturated. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

**Large stones** (in tables). Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

**Leaching.** The removal of soluble material from soil or other material by percolating water.

**Liquid limit.** The moisture content at which the soil passes from a plastic to a liquid state.

**Loam.** Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

**Loamy soil.** Coarse sandy loam, sandy loam, fine sandy loam, very fine sandy loam, loam, silt loam, silt, clay loam, sandy clay loam, or silty clay loam.

**Loess.** Fine-grained material, dominantly of silt-sized particles, deposited by the wind.

**Low-residue crops.** Such crops as corn used for silage, peas, beans, and potatoes. Residue from these crops is not adequate to control erosion until the next crop in the rotation is established. These crops return little organic matter to the soil.

**Low strength.** The soil is not strong enough to support loads.

**Marl.** An earthy, unconsolidated deposit consisting chiefly of calcium carbonate mixed with clay in approximately equal amounts.

**Masses.** Concentrations of substances in the soil matrix that do not have a clearly defined boundary

with the surrounding soil material and cannot be removed as a discrete unit. Common compounds making up masses are calcium carbonate, gypsum or other soluble salts, iron oxide, and manganese oxide. Masses consisting of iron oxide or manganese oxide generally are considered a type of redoximorphic concentration.

**Mechanical treatment.** Use of mechanical equipment for seeding, brush management, and other management practices.

**Medium textured soil.** Very fine sandy loam, loam, silt loam, or silt.

**Merchantable trees.** Trees that are large enough to be economically processed into wood products.

**Metamorphic rock.** Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement. Nearly all such rocks are crystalline.

**Mineral soil.** Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

**Minimum tillage.** Only the tillage essential to crop production and prevention of soil damage.

**Miscellaneous area.** An area that has little or no natural soil and supports little or no vegetation.

**Moderately coarse textured soil.** Coarse sandy loam, sandy loam, or fine sandy loam.

**Moderately deep soil.** A soil that is 20 to 40 inches deep over bedrock or to other material that restricts the penetration of plant roots.

**Moderately fine textured soil.** Clay loam, sandy clay loam, or silty clay loam.

**Mollic epipedon.** A thick, dark, humus-rich surface horizon (or horizons) that has high base saturation and pedogenic soil structure. It may include the upper part of the subsoil.

**Morphology, soil.** The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

**Mottling, soil.** Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—*few*, *common*, and *many*; size—*fine*, *medium*, and *coarse*; and contrast—*faint*, *distinct*, and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).

**Mountain.** A natural elevation of the land surface, rising more than 1,000 feet above surrounding

lowlands, commonly of restricted summit area (relative to a plateau) and generally having steep sides. A mountain can occur as a single, isolated mass or in a group forming a chain or range.

**Muck.** Dark, finely divided, well decomposed organic soil material. (See Sapric soil material.)

**Mudstone.** Sedimentary rock formed by induration of silt and clay in approximately equal amounts.

**Munsell notation.** A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

**Neutral soil.** A soil having a pH value between 6.6 and 7.3. (See Reaction, soil.)

**Nodules.** Cemented bodies lacking visible internal structure. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up nodules. If formed in place, nodules of iron oxide or manganese oxide are considered types of redoximorphic concentrations.

**Nutrient, plant.** Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

**Observed rooting depth.** Depth to which roots have been observed to penetrate.

**Organic matter.** Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low .....	less than 0.5 percent
Low .....	0.5 to 1.0 percent
Moderately low .....	1.0 to 2.0 percent
Moderate .....	2.0 to 4.0 percent
High .....	4.0 to 8.0 percent
Very high .....	more than 8.0 percent

**Overstory.** The trees in a forest that form the upper crown cover.

**Oxbow.** The horseshoe-shaped channel of a former meander that formed after the stream cut across a narrow meander neck.

**Pan.** A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan*, *fragipan*, *claypan*, *plowpan*, and *traffic pan*.

**Parent material.** The unconsolidated organic and mineral material in which soil forms.

**Peat.** Unconsolidated material, largely undecomposed

organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

**Ped.** An individual natural soil aggregate, such as a granule, a prism, or a block.

**Pedon.** The smallest volume that can be called “a soil.” A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

**Percolation.** The downward movement of water through the soil.

**Percs slowly** (in tables). The slow movement of water through the soil adversely affects the specified use.

**Permeability.** The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as “saturated hydraulic conductivity,” which is defined in the “Soil Survey Manual.” In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as “permeability.” Terms describing permeability, measured in inches per hour, are as follows:

Extremely slow .....	0.00 to 0.01 inch
Very slow .....	0.01 to 0.06 inch
Slow .....	0.06 to 0.2 inch
Moderately slow .....	0.2 to 0.6 inch
Moderate .....	0.6 inch to 2.0 inches
Moderately rapid .....	2.0 to 6.0 inches
Rapid .....	6.0 to 20 inches
Very rapid .....	more than 20 inches

**Phase, soil.** A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

**pH value.** A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

**Piping** (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

**Plasticity index.** The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

**Plastic limit.** The moisture content at which a soil changes from semisolid to plastic.

**Plinthite.** The sesquioxide-rich, humus-poor, highly weathered mixture of clay with quartz and other diluents. It commonly appears as red mottles, usually in platy, polygonal, or reticulate patterns.

Plinthite changes irreversibly to an ironstone hardpan or to irregular aggregates on repeated wetting and drying, especially if it is exposed also to heat from the sun. In a moist soil, plinthite can be cut with a spade. It is a form of laterite.

**Plowpan.** A compacted layer formed in the soil directly below the plowed layer.

**Ponding.** Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

**Poor filter** (in tables). Because of rapid or very rapid permeability, the soil may not adequately filter effluent from a waste disposal system.

**Poorly graded.** Refers to a coarse-grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

**Potential native plant community.** See Climax plant community.

**Potential rooting depth (effective rooting depth).**

Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

**Prescribed burning.** Deliberately burning an area for specific management purposes, under the appropriate conditions of weather and soil moisture and at the proper time of day.

**Productivity, soil.** The capability of a soil for producing a specified plant or sequence of plants under specific management.

**Profile, soil.** A vertical section of the soil extending through all its horizons and into the parent material.

**Proper grazing use.** Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

**Quartzite, metamorphic.** Rock consisting mainly of quartz that formed through recrystallization of quartz-rich sandstone or chert.

**Quartzite, sedimentary.** Very hard but unmetamorphosed sandstone consisting chiefly of quartz grains.

**Reaction, soil.** A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The

degrees of acidity or alkalinity, expressed as pH values, are:

Ultra acid .....	less than 3.5
Extremely acid .....	3.5 to 4.4
Very strongly acid .....	4.5 to 5.0
Strongly acid .....	5.1 to 5.5
Moderately acid .....	5.6 to 6.0
Slightly acid .....	6.1 to 6.5
Neutral .....	6.6 to 7.3
Slightly alkaline .....	7.4 to 7.8
Moderately alkaline .....	7.9 to 8.4
Strongly alkaline .....	8.5 to 9.0
Very strongly alkaline .....	9.1 and higher

**Red beds.** Sedimentary strata that are mainly red and are made up largely of sandstone and shale.

**Redoximorphic concentrations.** Nodules, concretions, soft masses, pore linings, and other features resulting from the accumulation of iron or manganese oxide. An indication of chemical reduction and oxidation resulting from saturation.

**Redoximorphic depletions.** Low-chroma zones from which iron and manganese oxide or a combination of iron and manganese oxide and clay has been removed. These zones are indications of the chemical reduction of iron resulting from saturation.

**Redoximorphic features.** Redoximorphic concentrations, redoximorphic depletions, reduced matrices, a positive reaction to alpha,alpha-dipyridyl, and other features indicating the chemical reduction and oxidation of iron and manganese compounds resulting from saturation.

**Reduced matrix.** A soil matrix that has low chroma in situ because of chemically reduced iron (Fe II). The chemical reduction results from nearly continuous wetness. The matrix undergoes a change in hue or chroma within 30 minutes after exposure to air as the iron is oxidized (Fe III). A type of redoximorphic feature.

**Regeneration.** The new growth of a natural plant community, developing from seed.

**Regolith.** The unconsolidated mantle of weathered rock and soil material on the earth's surface; the loose earth material above the solid rock.

**Relict stream terrace.** One of a series of platforms in or adjacent to a stream valley that formed prior to the current stream system.

**Relief.** The elevations or inequalities of a land surface, considered collectively.

**Residuum (residual soil material).** Unconsolidated, weathered or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

**Rill.** A steep-sided channel resulting from accelerated erosion. A rill is generally a few inches deep and not wide enough to be an obstacle to farm machinery.

**Riser.** The relatively short, steeply sloping area below a terrace tread that grades to a lower terrace tread or base level.

**Riverwash.** Unstable areas of sandy, silty, clayey, or gravelly sediments. These areas are flooded, washed, and reworked by rivers so frequently that they support little or no vegetation.

**Road cut.** A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

**Rock fragments.** Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

**Rock outcrop.** Exposures of bare bedrock other than lava flows and rock-lined pits.

**Rooting depth** (in tables). Shallow root zone. The soil is shallow over a layer that greatly restricts roots.

**Root zone.** The part of the soil that can be penetrated by plant roots.

**Runoff.** The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

**Saline soil.** A soil containing soluble salts in an amount that impairs the growth of plants. A saline soil does not contain excess exchangeable sodium.

**Salinity.** The electrical conductivity of a saline soil. It is expressed, in millimhos per centimeter, as follows:

Nonsaline .....	0 to 4
Slightly saline .....	4 to 8
Moderately saline .....	8 to 16
Strongly saline .....	more than 16

**Sand.** As a soil separate, individual rock or mineral fragments ranging from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

**Sandstone.** Sedimentary rock containing dominantly sand-sized particles.

**Sandy soil.** Sand or loamy sand.

**Sapric soil material (muck).** The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

**Saprolite.** Unconsolidated residual material underlying the soil and grading to hard bedrock below.

**Saturation.** Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

**Sawlogs.** Logs of suitable size and quality for the production of lumber.

**Second bottom.** The first terrace above the normal flood plain (or first bottom) of a river.

**Sedimentary rock.** Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

**Sedimentary uplands.** Areas of bedrock formed from water- or wind-deposited sediments. They are higher on the landscape than flood plains.

**Seepage** (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

**Sequum.** A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

**Series, soil.** A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

**Shale.** Sedimentary rock formed by the hardening of a clay deposit.

**Shallow soil.** A soil that is 10 to 20 inches deep over bedrock or to other material that restricts the penetration of plant roots.

**Sheet erosion.** The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

**Shoulder slope.** The uppermost inclined surface at the top of a hillside. It is the transition zone from the back slope to the summit of a hill or mountain. The surface is dominantly convex in profile and erosional in origin.

**Shrink-swell** (in tables). The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

**Silica.** A combination of silicon and oxygen. The mineral form is called quartz.

**Silica-sesquioxide ratio.** The ratio of the number of molecules of silica to the number of molecules of

alumina and iron oxide. The more highly weathered soils or their clay fractions in warm-temperate, humid regions, and especially those in the tropics, generally have a low ratio.

**Silt.** As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

**Siltstone.** Sedimentary rock made up of dominantly silt-sized particles.

**Similar soils.** Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

**Sinkhole.** A depression in the landscape where limestone has been dissolved.

**Site index.** A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.

**Skid trails.** The paths left by skidding logs and the bulldozer or tractor used to pull them.

**Slash.** The branches, bark, treetops, reject logs, and broken or uprooted trees left on the ground after logging.

**Slickensides.** Polished and grooved surfaces produced by one mass sliding past another. In soils, slickensides may occur at the bases of slip surfaces on the steeper slopes; on faces of blocks, prisms, and columns; and in swelling clayey soils, where there is marked change in moisture content.

**Slick spot.** A small area of soil having a puddled, crusted, or smooth surface and an excess of exchangeable sodium. The soil generally is silty or clayey, is slippery when wet, and is low in productivity.

**Slope.** The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance. In this survey the following slope classes are recognized:

Nearly level .....	0 to 2 percent
Gently sloping .....	2 to 7 percent
Strongly sloping .....	7 to 15 percent
Moderately steep .....	15 to 25 percent

Steep .....	25 to 35 percent
Very steep .....	35 percent and higher

Classes for complex slopes are as follows:

Nearly level .....	0 to 2 percent
Undulating .....	2 to 7 percent
Gently rolling .....	7 to 15 percent
Hilly .....	15 to 25 percent
Steep .....	25 to 35 percent
Very steep .....	35 percent and higher

**Slope** (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

**Small stones** (in tables). Rock fragments less than 3 inches (7.6 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

**Soft bedrock.** Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

**Soil.** A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

**Soil separates.** Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand .....	2.0 to 1.0
Coarse sand .....	1.0 to 0.5
Medium sand .....	0.5 to 0.25
Fine sand .....	0.25 to 0.10
Very fine sand .....	0.10 to 0.05
Silt .....	0.05 to 0.002
Clay .....	less than 0.002

**Solum.** The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.

**Species.** A single, distinct kind of plant or animal having certain distinguishing characteristics.

**Stone line.** A concentration of coarse fragments in a soil. Generally, it is indicative of an old weathered surface. In a cross section, the line may be one fragment or more thick. It generally overlies material that weathered in place and is overlain by recent sediment of variable thickness.

**Stones.** Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

**Stony.** Refers to a soil containing stones in numbers that interfere with or prevent tillage.

**Stream channel.** The hollow bed where a natural stream of surface water flows or may flow; the deepest or central part of the bed that was formed by the main current and covered almost continuously by water.

**Stream terrace.** One of a series of platforms in a stream valley, flanking and more or less parallel to the stream channel. The terrace originally formed near the level of the stream and is the dissected remnants of an abandoned flood plain, streambed, or valley floor that were produced during an earlier stage of erosion or deposition.

**Stripcropping.** Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to soil blowing and water erosion.

**Structure, soil.** The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are: *platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grain* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

**Stubble mulch.** Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from soil blowing and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

**Subsoil.** Technically, the B horizon; roughly, the part of the solum below plow depth.

**Subsoiling.** Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

**Substratum.** The part of the soil below the solum.

**Subsurface layer.** Any surface soil horizon (A, E, AB, or EB) below the surface layer.

**Summit.** A general term for the top, or highest level, of an upland feature, such as a hill or mountain. It commonly refers to a higher area that has a gentle slope and is flanked by steeper slopes.

**Surface layer.** The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

**Surface soil.** The A, E, AB, and EB horizons,

considered collectively. It includes all subdivisions of these horizons.

**Tailwater.** The water directly downstream of a structure.

**Talus.** Fragments of rock and other soil material accumulated by gravity at the foot of cliffs or steep slopes.

**Taxadjuncts.** Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior. Soils are recognized as taxadjuncts only when one or more of their characteristics are slightly outside the range defined for the family of the series for which the soils are named.

**Terrace.** An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field is generally built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

**Terrace (geologic).** An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

**Texture, soil.** The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand*, *loamy sand*, *sandy loam*, *loam*, *silt loam*, *silt*, *sandy clay loam*, *clay loam*, *silty clay loam*, *sandy clay*, *silty clay*, and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

**Thin layer** (in tables). Otherwise suitable soil material too thin for the specified use.

**Tilth, soil.** The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

**Toe slope.** The outermost inclined surface at the base of a hill; part of a foot slope.

**Topsoil.** The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

**Trafficability.** The degree to which a soil is capable of supporting vehicular traffic across a wide range in soil moisture conditions.

**Tread.** The relatively flat terrace surface that was cut or built by stream or wave action.

**Understory.** Any plants in a forest community that grow to a height of less than 5 feet.

**Upland** (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

**Valley.** An elongated depressional area primarily developed by stream action.

**Valley fill.** In glaciated regions, material deposited in stream valleys by glacial meltwater. In nonglaciated regions, alluvium deposited by heavily loaded streams.

**Variegation.** Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

**Varve.** A sedimentary layer or a lamina or sequence of laminae deposited in a body of still water within a year. Specifically, a thin pair of graded glaciolacustrine layers seasonally deposited, usually by meltwater streams, in a glacial lake or other body of still water in front of a glacier.

**Very deep soil.** A soil that is more than 60 inches deep over bedrock or to other material that restricts the penetration of plant roots.

**Very shallow soil.** A soil that is less than 10 inches

deep over bedrock or to other material that restricts the penetration of plant roots.

**Waterspreading.** Diverting water runoff from natural channels by a system of dams, dikes, or ditches and distributing it over relatively flat surfaces.

**Weathering.** All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

**Well graded.** Refers to soil material consisting of coarse-grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

**Wilting point (or permanent wilting point).** The moisture content of soil, on an oven-dry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

**Windthrow.** The uprooting and tipping over of trees by the wind.



# Tables

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Table 1.--Temperature and Precipitation  
(Recorded in the period 1961-90 at Tye River Station, Virginia)

Month	Temperature						Precipitation					
	Average daily maximum	Average daily minimum	Average	2 years in 10 will have--		Average number of growing degree days*	Average	2 years in 10 will have--		Average number of days with 0.10 inch or more	Average snowfall	
				Maximum temperature higher than--	Minimum temperature lower than--			Less than--	More than--			
° F	° F	° F	° F	° F	Units	In	In	In		In		
January-----	45.2	24.1	34.7	71	0	55	3.21	1.54	4.65	6	4.1	
February-----	48.6	25.8	37.2	74	6	75	3.22	1.50	4.69	6	2.3	
March-----	58.5	33.7	46.1	84	15	234	3.88	2.19	5.38	7	.4	
April-----	69.1	42.5	55.8	91	24	473	3.32	2.00	4.49	6	.1	
May-----	76.3	51.4	63.9	92	33	740	4.55	2.71	6.19	7	.0	
June-----	83.7	60.0	71.8	96	44	954	3.17	1.31	4.75	5	.0	
July-----	87.1	64.7	75.9	100	52	1,110	4.57	2.17	6.65	7	.0	
August-----	86.1	63.5	74.8	98	49	1,078	3.46	1.38	5.22	6	.0	
September---	80.0	56.8	68.4	96	38	852	3.69	1.13	5.78	5	.0	
October-----	70.1	44.3	57.2	87	26	532	4.31	1.67	6.52	5	.1	
November----	60.6	35.7	48.1	82	16	270	3.44	1.86	4.83	5	.4	
December----	49.3	27.9	38.6	73	6	103	3.25	1.53	4.74	6	1.4	
Yearly:												
Average---	67.9	44.2	56.0	---	---	---	---	---	---	---	---	
Extreme---	105	-10	---	100	-1	---	---	---	---	---	---	
Total-----	---	---	---	---	---	6,475	44.07	35.16	51.74	71	8.8	

\* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (40 degrees F).

Table 2.—Freeze Dates in Spring and Fall  
(Recorded in the period 1963-90 at Tye River Station,  
Virginia)

Probability	Temperature		
	24 °F or lower	28 °F or lower	32 °F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	Apr. 11	Apr. 21	Apr. 30
2 years in 10 later than--	Apr. 4	Apr. 15	Apr. 25
5 years in 10 later than--	Mar. 23	Apr. 6	Apr. 16
First freezing temperature in fall:			
1 year in 10 earlier than--	Oct. 30	Oct. 13	Oct. 1
2 years in 10 earlier than--	Nov. 5	Oct. 19	Oct. 7
5 years in 10 earlier than--	Nov. 15	Nov. 1	Oct. 17

Table 3.—Growing Season  
(Recorded in the period 1963-90 at Tye River  
Station, Virginia)

Probability	Daily minimum temperature during growing season		
	Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	<u>Days</u>	<u>Days</u>	<u>Days</u>
9 years in 10	213	185	162
8 years in 10	222	193	170
5 years in 10	238	208	184
2 years in 10	254	223	199
1 year in 10	262	231	207

Table 4.--Acreage and Proportionate Extent of the  
General Soil Map Units and Their Components

Name and components	Acres	Percent of survey area	Percent of map unit
1. Hayesville-Occoquan-Wintergreen----	78,967	26.0	
Hayesville-----	44,213		56
Occoquan-----	20,035		25
Wintergreen-----	14,676		19
Pits, quarry-----	43		<1
2. Elioak-Hazel-----	37,371	12.3	
Elioak-----	20,065		53
Hazel-----	16,544		45
Glenelg-----	697		2
Pits, quarry-----	33		<1
Edneytown-----	12		<1
3. Bugley-Littlejoe-Buffstat-----	25,920	8.5	
Bugley-----	17,307		67
Littlejoe-----	5,683		22
Buffstat-----	2,930		11
4. Minnieville-Spriggs-----	12,870	4.3	
Minnieville-----	8,154		63
Spriggs-----	4,686		37
Pits, quarry-----	30		<1
5. Warminster-Arcola-----	1,774	0.6	
Warminster-----	912		51
Arcola-----	862		49
6. Colleen-Sketerville-Pineywoods----	5,063	1.7	
Colleen-----	2,362		47
Sketerville-----	1,450		29
Pineywoods-----	1,239		24
Pits, quarry-----	12		<1
7. Jackland-----	2,164	0.7	
Jackland-----	2,164		100
8. Fauquier-Spriggs-----	4,792	1.6	
Fauquier-----	4,051		84
Spriggs-----	741		16

Table 4.--Acreage and Proportionate Extent of the  
General Soil Map Units and Their Components--Continued

Name and components	Acres	Percent of survey area	Percent of map unit
9. Myersville-Catoctin-Lew-----	14,544	4.8	
Myersville-----	5,480		37
Catoctin-----	4,744		33
Lew-----	3,590		25
Rock outcrop-----	730		5
10. Edneytown-Peaks-----	85,466	28.1	
Edneytown-----	40,376		47
Peaks-----	28,694		34
Saunook-----	7,836		9
Rock outcrop-----	5,284		6
Thurmont-----	3,230		4
Hayesville-----	23		<1
Occoquan-----	23		<1
11. Sylco-Sylvatus-----	3,696	1.2	
Sylco-----	1,824		49
Sylvatus-----	1,737		47
Rock outcrop-----	135		4
12. Wingina-Galtsmill-Batteau-----	3,709	1.2	
Wingina-----	1,043		29
Galtsmill-----	637		17
Batteau-----	567		15
Yogaville-----	347		9
Water-----	1,115		30
13. Delanco-Craigsville-Suches-----	27,244	9.0	
Delanco-----	7,131		26
Craigsville-----	3,938		15
Suches-----	3,324		12
Colvard-----	3,294		12
Unison-----	3,225		12
Codorus-----	2,612		9
Lew-----	755		3
Chatuge-----	567		2
Hatboro-----	538		2
Elsinboro-----	270		1
Belvoir-----	227		1
Pits, quarry-----	101		<1
Udorthents-----	117		<1
Water-----	1,145		4

Table 5.--Acreage and Proportionate Extent of the Detailed Soil Map Units

Map symbol	Soil name	Acres	Percent
1D	Arcola gravelly silt loam, 15 to 25 percent slopes-----	496	0.2
1E	Arcola gravelly silt loam, 25 to 50 percent slopes-----	420	0.1
2A	Batteau loam, 0 to 2 percent slopes, occasionally flooded-----	578	0.2
3B	Belvoir sandy loam, 2 to 7 percent slopes-----	228	0.1
4B	Buffstat silt loam, 2 to 7 percent slopes-----	335	0.1
4C	Buffstat silt loam, 7 to 15 percent slopes-----	1,624	0.5
4D	Buffstat silt loam, 15 to 25 percent slopes-----	991	0.3
5C	Bugley channery silt loam, 7 to 15 percent slopes-----	2,041	0.7
5D	Bugley channery silt loam, 15 to 25 percent slopes-----	4,350	1.4
5E	Bugley channery silt loam, 25 to 50 percent slopes-----	10,788	3.6
6E	Catoctin-Rock outcrop complex, 25 to 75 percent slopes, extremely stony-----	1,826	0.6
7B	Chatuge loam, 1 to 4 percent slopes-----	572	0.2
8A	Codorus silt loam, 0 to 2 percent slopes, occasionally flooded-----	2,590	0.9
9B	Colleen gravelly loam, 2 to 7 percent slopes-----	811	0.3
9C	Colleen gravelly loam, 7 to 15 percent slopes-----	1,150	0.4
9D	Colleen gravelly loam, 15 to 25 percent slopes-----	402	0.1
10A	Colvard fine sandy loam, 0 to 2 percent slopes, occasionally flooded-----	3,293	1.1
11A	Craigsville very cobbly loam, 0 to 2 percent slopes, frequently flooded-----	3,962	1.3
12B	Delanco loam, 2 to 7 percent slopes-----	6,183	2.0
12C	Delanco loam, 7 to 15 percent slopes-----	922	0.3
13C	Edneytown loam, 7 to 15 percent slopes-----	1,122	0.4
13D	Edneytown loam, 15 to 25 percent slopes-----	1,292	0.4
13E	Edneytown loam, 25 to 50 percent slopes-----	2,600	0.9
14C	Edneytown-Peaks complex, 7 to 15 percent slopes, extremely stony-----	2,270	0.7
14D	Edneytown-Peaks complex, 15 to 35 percent slopes, extremely stony-----	6,227	2.1
14E	Edneytown-Peaks complex, 35 to 55 percent slopes, extremely stony-----	45,732	15.1
14F	Edneytown-Peaks complex, 55 to 75 percent slopes, extremely stony-----	234	0.1
15B	Elioak loam, 2 to 7 percent slopes-----	3,785	1.2
15C	Elioak loam, 7 to 15 percent slopes-----	8,857	2.9
15D	Elioak loam, 15 to 25 percent slopes-----	5,545	1.8
16C	Elioak clay loam, 7 to 15 percent slopes, severely eroded-----	971	0.3
16D	Elioak clay loam, 15 to 25 percent slopes, severely eroded-----	646	0.2
17B	Elsinboro loam, 2 to 7 percent slopes, rarely flooded-----	275	0.1
18C	Fauquier loam, 7 to 15 percent slopes, very stony-----	410	0.1
18D	Fauquier loam, 15 to 25 percent slopes, very stony-----	853	0.3
18E	Fauquier loam, 25 to 50 percent slopes, very stony-----	2,785	0.9
19A	Galtsmill fine sandy loam, 0 to 2 percent slopes, occasionally flooded-----	634	0.2
20D	Glenelg silt loam, 15 to 25 percent slopes-----	712	0.2
21A	Hatboro loam, 0 to 2 percent slopes, frequently flooded-----	536	0.2
22B	Hayesville loam, 2 to 7 percent slopes-----	5,197	1.7
22C	Hayesville loam, 7 to 15 percent slopes-----	12,249	4.0
22D	Hayesville loam, 15 to 25 percent slopes-----	7,096	2.3
22E	Hayesville loam, 25 to 50 percent slopes-----	2,620	0.9
23B	Hayesville clay loam, 2 to 7 percent slopes, severely eroded-----	432	0.1
23C	Hayesville clay loam, 7 to 15 percent slopes, severely eroded-----	4,910	1.6
23D	Hayesville clay loam, 15 to 25 percent slopes, severely eroded-----	5,864	1.9
23E	Hayesville clay loam, 25 to 50 percent slopes, severely eroded-----	1,632	0.5
24C	Hayesville loam, 7 to 15 percent slopes, very stony-----	641	0.2
24D	Hayesville loam, 15 to 25 percent slopes, very stony-----	1,202	0.4
24E	Hayesville loam, 25 to 50 percent slopes, very stony-----	2,436	0.8
25C	Hazel channery loam, 7 to 15 percent slopes-----	214	0.1
25D	Hazel channery loam, 15 to 25 percent slopes-----	1,614	0.5
25E	Hazel channery loam, 25 to 50 percent slopes-----	9,837	3.2
26D	Hazel loam, 15 to 25 percent slopes, very stony-----	762	0.3
26E	Hazel loam, 25 to 50 percent slopes, very stony-----	4,060	1.3
27B	Jackland gravelly silt loam, 2 to 7 percent slopes-----	1,460	0.5
27C	Jackland gravelly silt loam, 7 to 15 percent slopes-----	691	0.2
28B	Lew silt loam, 2 to 7 percent slopes-----	382	0.1
29B	Lew silt loam, 2 to 7 percent slopes, extremely stony-----	374	0.1
30C	Lew channery silt loam, 7 to 15 percent slopes, extremely bouldery-----	1,426	0.5
30D	Lew channery silt loam, 15 to 25 percent slopes, extremely bouldery-----	1,182	0.4

See footnote at end of table.

Table 5.--Acreage and Proportionate Extent of the Detailed Soil Map Units--Continued

Map symbol	Soil name	Acres	Percent
30E	Lew channery silt loam, 25 to 75 percent slopes, extremely bouldery-----	960	0.3
31B	Littlejoe silt loam, 2 to 7 percent slopes-----	1,717	0.6
31C	Littlejoe silt loam, 7 to 15 percent slopes-----	3,985	1.3
32B	Minnieville loam, 2 to 7 percent slopes-----	1,058	0.3
32C	Minnieville loam, 7 to 15 percent slopes-----	3,672	1.2
32D	Minnieville loam, 15 to 25 percent slopes-----	2,732	0.9
32E	Minnieville loam, 25 to 50 percent slopes-----	470	0.2
33C	Myersville-Catoctin complex, 7 to 15 percent slopes, extremely stony-----	954	0.3
33D	Myersville-Catoctin complex, 15 to 35 percent slopes, extremely stony-----	2,679	0.9
33E	Myersville-Catoctin complex, 35 to 55 percent slopes, extremely stony-----	5,588	1.8
34C	Occoquan loam, 7 to 15 percent slopes-----	792	0.3
34D	Occoquan loam, 15 to 25 percent slopes-----	2,964	1.0
34E	Occoquan loam, 25 to 50 percent slopes-----	8,451	2.8
35D	Occoquan loam, 15 to 25 percent slopes, very stony-----	608	0.2
35E	Occoquan loam, 25 to 50 percent slopes, very stony-----	7,211	2.4
36D	Peaks-Rock outcrop complex, 15 to 35 percent slopes-----	724	0.2
36E	Peaks-Rock outcrop complex, 35 to 55 percent slopes-----	7,217	2.4
36F	Peaks-Rock outcrop complex, 55 to 75 percent slopes-----	7,154	2.4
37A	Pineywoods silt loam, 0 to 2 percent slopes-----	1,235	0.4
38	Pits, quarry-----	239	0.1
39C	Saunook loam, 7 to 15 percent slopes-----	861	0.3
39D	Saunook loam, 15 to 25 percent slopes-----	296	0.1
40C	Saunook loam, 7 to 15 percent slopes, very stony-----	2,679	0.9
40D	Saunook loam, 15 to 25 percent slopes, very stony-----	3,210	1.1
40E	Saunook loam, 25 to 50 percent slopes, very stony-----	752	0.2
41B	Sketerville silt loam, 2 to 7 percent slopes-----	1,455	0.5
42C	Spriggs loam, 7 to 15 percent slopes, very stony-----	1,169	0.4
42D	Spriggs loam, 15 to 25 percent slopes, very stony-----	1,025	0.3
42E	Spriggs loam, 25 to 50 percent slopes, very stony-----	3,191	1.1
43A	Suches loam, 0 to 2 percent slopes, frequently flooded-----	3,374	1.1
44C	Sylco-Sylvatus complex, 7 to 15 percent slopes, extremely stony-----	343	0.1
44D	Sylco-Sylvatus complex, 15 to 35 percent slopes, extremely stony-----	824	0.3
44E	Sylco-Sylvatus complex, 35 to 55 percent slopes, extremely stony-----	2,169	0.7
45E	Sylvatus-Rock outcrop complex, 35 to 55 percent slopes, extremely stony-----	240	0.1
45F	Sylvatus-Rock outcrop complex, 55 to 70 percent slopes, extremely stony-----	199	0.1
46B	Thurmont loam, 2 to 7 percent slopes-----	609	0.2
46C	Thurmont loam, 7 to 15 percent slopes-----	876	0.3
46D	Thurmont loam, 15 to 25 percent slopes-----	260	0.1
47B	Thurmont loam, 2 to 7 percent slopes, very stony-----	577	0.2
47C	Thurmont loam, 7 to 15 percent slopes, very stony-----	386	0.1
47D	Thurmont loam, 15 to 25 percent slopes, very stony-----	496	0.2
48	Udorthents, smoothed-----	124	*
49B	Unison loam, 2 to 7 percent slopes-----	1,796	0.6
49C	Unison loam, 7 to 15 percent slopes-----	1,005	0.3
49D	Unison loam, 15 to 25 percent slopes-----	394	0.1
50B	Warminster clay loam, 2 to 7 percent slopes-----	304	0.1
50C	Warminster clay loam, 7 to 15 percent slopes-----	727	0.2
50D	Warminster clay loam, 15 to 25 percent slopes-----	125	*
51A	Wingina loam, 0 to 2 percent slopes, occasionally flooded-----	1,077	0.4
52B	Wintergreen loam, 2 to 7 percent slopes-----	4,205	1.4
52C	Wintergreen loam, 7 to 15 percent slopes-----	4,525	1.5
52D	Wintergreen loam, 15 to 25 percent slopes-----	1,096	0.4
53B	Wintergreen clay loam, 2 to 7 percent slopes, severely eroded-----	1,068	0.4
53C	Wintergreen clay loam, 7 to 15 percent slopes, severely eroded-----	2,635	0.9
53D	Wintergreen clay loam, 15 to 25 percent slopes, severely eroded-----	994	0.3
54C	Wintergreen loam, 7 to 15 percent slopes, very stony-----	166	0.1
55A	Yogaville loam, 0 to 2 percent slopes, occasionally flooded-----	349	0.1
	Water-----	2,260	0.7
	Total-----	303,580	100.0

\* Less than 0.1 percent.

Table 6.—Land Capability and Yields per Acre of Crops and Pasture

(Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)

Soil name and map symbol	Land capability	Corn	Soybeans	Barley	Alfalfa hay	Grass-legume hay	Pasture
		<u>Bu</u>	<u>Bu</u>	<u>Bu</u>	<u>Tons</u>	<u>Tons</u>	<u>AUM*</u>
1D----- Arcola	IVe	---	---	---	---	1.0	5.5
1E----- Arcola	VIIe	---	---	---	---	---	5.0
2A----- Batteau	IIw	130	60	---	4.5	3.5	9.7
3B----- Belvoir	IIIw	80	30	30	---	2.0	4.0
4B----- Buffstat	IIe	90	30	35	3.0	3.0	8.0
4C----- Buffstat	IIIe	85	30	30	2.0	2.5	7.5
4D----- Buffstat	IVe	---	---	---	---	2.0	6.0
5C, 5D----- Bugley	VIIs	---	---	---	---	---	2.0
5E----- Bugley	VIIe	---	---	---	---	---	1.0
6E**----- Catoclin-Rock outcrop	VIIIs	---	---	---	---	---	---
7B----- Chatuge	IVw	60	---	---	---	2.0	3.5
8A----- Codorus	IIw	100	35	35	---	3.5	8.0
9B----- Colleen	IIe	70	---	---	---	3.0	5.0
9C----- Colleen	IIIe	60	---	---	---	2.5	4.5
9D----- Colleen	IVe	50	---	---	---	2.0	4.0
10A----- Colvard	IIw	90	25	30	---	2.0	6.0
11A----- Craigsville	IIIIs	80	25	30	---	3.0	7.0
12B----- Delanco	IIe	120	35	50	---	3.5	8.5

See footnotes at end of table.

Table 6.—Land Capability and Yields per Acre of Crops and Pasture—Continued

Soil name and map symbol	Land capability	Corn	Soybeans	Barley	Alfalfa hay	Grass-legume hay	Pasture
		<u>Bu</u>	<u>Bu</u>	<u>Bu</u>	<u>Tons</u>	<u>Tons</u>	<u>AUM*</u>
12C----- Delanco	IIIe	115	30	45	---	3.0	8.0
13C----- Edneytown	IVe	70	25	45	3.5	3.0	7.0
13D----- Edneytown	VIe	---	---	---	---	2.5	5.0
13E----- Edneytown	VIIe	---	---	---	---	---	---
14C, 14D----- Edneytown- Peaks	VIIIs	---	---	---	---	---	---
14E, 14F----- Edneytown- Peaks	VIIe	---	---	---	---	---	---
15B----- Elioak	IIe	130	40	70	5.0	4.0	8.5
15C----- Elioak	IIIe	110	30	60	4.5	3.0	7.5
15D----- Elioak	IVe	---	---	---	2.0	2.5	6.0
16C----- Elioak	IVe	90	20	40	3.0	2.5	6.0
16D----- Elioak	VIe	---	---	---	---	1.5	5.0
17B----- Elsinboro	IIe	135	45	75	5.5	4.5	9.5
18C, 18D----- Fauquier	VIIs	---	---	---	---	---	5.0
18E----- Fauquier	VIIIs	---	---	---	---	---	---
19A----- Galtsmill	I	130	60	---	4.5	3.5	9.7
20D----- Glenelg	IVe	---	---	---	2.0	2.5	6.0
21A----- Hatboro	IIIw	90	---	---	---	2.0	5.0
22B----- Hayesville	IIe	130	40	70	5.5	4.5	8.5
22C----- Hayesville	IVe	110	30	60	4.5	3.0	7.5

See footnotes at end of table.

Table 6.—Land Capability and Yields per Acre of Crops and Pasture—Continued

Soil name and map symbol	Land capability	Corn	Soybeans	Barley	Alfalfa hay	Grass-legume hay	Pasture
		<u>Bu</u>	<u>Bu</u>	<u>Bu</u>	<u>Tons</u>	<u>Tons</u>	<u>AUM*</u>
22D----- Hayesville	VIe	---	---	---	2.0	2.5	6.0
22E----- Hayesville	VIIe	---	---	---	---	---	---
23B----- Hayesville	IIIe	100	30	55	4.5	4.0	7.5
23C----- Hayesville	IVe	90	20	40	3.0	2.5	6.0
23D----- Hayesville	VIe	---	---	---	---	1.5	5.0
23E----- Hayesville	VIIe	---	---	---	---	---	---
24C----- Hayesville	VIIs	---	---	---	---	---	5.0
24D, 24E----- Hayesville	VIIIs	---	---	---	---	---	3.5
25C----- Hazel	IIIe	---	---	---	---	1.5	3.5
25D----- Hazel	IVe	---	---	---	---	---	3.0
25E----- Hazel	VIIe	---	---	---	---	---	---
26D----- Hazel	VIIIs	---	---	---	---	---	3.0
26E----- Hazel	VIIe	---	---	---	---	---	---
27B----- Jackland	IIe	65	25	70	---	---	8.0
27C----- Jackland	IIIe	60	15	65	---	---	7.0
28B----- Lew	IIe	80	25	30	---	3.0	7.0
29B, 30C, 30D--- Lew	VIIIs	---	---	---	---	---	---
30E----- Lew	VIIe	---	---	---	---	---	---
31B----- Littlejoe	IIe	90	30	35	3.0	3.0	8.0
31C----- Littlejoe	IIIe	85	30	30	2.0	2.5	7.5

See footnotes at end of table.

Table 6.—Land Capability and Yields per Acre of Crops and Pasture—Continued

Soil name and map symbol	Land capability	Corn	Soybeans	Barley	Alfalfa hay	Grass-legume hay	Pasture
		<u>Bu</u>	<u>Bu</u>	<u>Bu</u>	<u>Tons</u>	<u>Tons</u>	<u>AUM*</u>
32B----- Minnieville	IIe	135	45	70	5.5	4.5	9.0
32C----- Minnieville	IIIe	125	40	65	5.0	3.6	8.0
32D----- Minnieville	IVe	---	---	---	4.5	3.0	7.0
32E----- Minnieville	VIIe	---	---	---	---	---	---
33C, 33D----- Myersville- Catoctin	VIIIs	---	---	---	---	---	4.5
33E----- Myersville- Catoctin	VIIe	---	---	---	---	---	---
34C----- Occoquan	IVe	50	10	20	---	1.5	3.0
34D----- Occoquan	VIe	---	---	---	---	---	3.0
34E----- Occoquan	VIIe	---	---	---	---	---	---
35D----- Occoquan	VIIIs	---	---	---	---	---	3.0
35E----- Occoquan	VIIe	---	---	---	---	---	2.0
36D**, 36E**, 36F**----- Peaks-Rock outcrop	VIIIs	---	---	---	---	---	---
37A----- Pineywoods	Vw	---	---	---	---	---	3.0
38**----- Pits	VIIIIs	---	---	---	---	---	---
39C----- Saunook	IVe	110	30	40	3.0	5.0	6.5
39D----- Saunook	VIe	---	---	---	---	4.7	6.0
40C----- Saunook	IVs	---	---	---	---	4.5	6.0
40D----- Saunook	VIIs	---	---	---	---	---	5.5
40E----- Saunook	VIIIs	---	---	---	---	---	---

See footnotes at end of table.

Table 6.—Land Capability and Yields per Acre of Crops and Pasture—Continued

Soil name and map symbol	Land capability	Corn	Soybeans	Barley	Alfalfa hay	Grass-legume hay	Pasture
		<u>Bu</u>	<u>Bu</u>	<u>Bu</u>	<u>Tons</u>	<u>Tons</u>	<u>AUM*</u>
41B----- Sketerville	IIe	---	---	---	---	2.5	3.5
42C, 42D----- Spriggs	VIIIs	---	---	---	---	1.5	4.5
42E----- Spriggs	VIIe	---	---	---	---	---	2.5
43A----- Suches	IIw	135	40	65	---	5.0	8.0
44C, 44D----- Sylco-Sylvatus	VIIIs	---	---	---	---	---	---
44E----- Sylco-Sylvatus	VIIe	---	---	---	---	---	---
45E**, 45F**----- Sylvatus-Rock outcrop	VIIIs	---	---	---	---	---	---
46B----- Thurmont	IIe	125	35	45	3.0	5.0	6.5
46C----- Thurmont	IIIe	110	30	40	2.5	4.0	6.0
46D----- Thurmont	IVe	---	---	---	---	3.5	5.0
47B, 47C, 47D--- Thurmont	VIIs	---	---	---	---	---	5.0
48. Udorthents							
49B----- Unison	IIe	125	40	65	5.0	5.0	8.5
49C----- Unison	IIIe	100	30	60	4.5	4.7	7.5
49D----- Unison	IVe	---	---	---	2.0	2.5	6.0
50B----- Warminster	IIe	110	35	40	4.0	3.5	7.0
50C----- Warminster	IIIe	90	30	35	3.5	3.0	6.0
50D----- Warminster	IVe	---	---	---	---	2.0	5.0
51A----- Wingina	I	130	60	---	4.5	3.5	9.7
52B----- Wintergreen	IIe	130	40	70	5.5	4.5	8.5

See footnotes at end of table.

Table 6.—Land Capability and Yields per Acre of Crops and Pasture—Continued

Soil name and map symbol	Land capability	Corn	Soybeans	Barley	Alfalfa hay	Grass-legume hay	Pasture
		<u>Bu</u>	<u>Bu</u>	<u>Bu</u>	<u>Tons</u>	<u>Tons</u>	<u>AUM*</u>
52C----- Wintergreen	IIIe	110	30	60	4.5	3.0	7.5
52D----- Wintergreen	IVe	---	---	---	3.0	2.5	6.0
53B----- Wintergreen	IIIe	100	30	55	4.5	3.0	7.5
53C----- Wintergreen	IVe	90	20	40	3.0	2.5	6.0
53D----- Wintergreen	VIe	---	---	---	---	1.5	5.0
54C----- Wintergreen	VIIs	---	---	---	---	---	5.0
55A----- Yogaville	IVw	65	---	---	3.5	3.2	8.6

\* Animal unit month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

\*\* See description of the map unit for composition and behavior characteristics of the map unit.

Table 7.—Prime Farmland

(Only the soils considered prime farmland are listed. Urban or built-up areas of the soils listed are not considered prime farmland. If a soil is prime farmland only under certain conditions, the conditions are specified in parentheses after the soil name)

Map symbol	Soil name
2A	Batteau loam, 0 to 2 percent slopes, occasionally flooded
4B	Buffstat silt loam, 2 to 7 percent slopes
7B	Chatuge loam, 1 to 4 percent slopes (where drained)
8A	Codorus silt loam, 0 to 2 percent slopes, occasionally flooded (where drained)
9B	Colleen gravelly loam, 2 to 7 percent slopes
10A	Colvard fine sandy loam, 0 to 2 percent slopes, occasionally flooded
12B	Delanco loam, 2 to 7 percent slopes
15B	Elioak loam, 2 to 7 percent slopes
17B	Elsinboro loam, 2 to 7 percent slopes, rarely flooded
19A	Galtsmill fine sandy loam, 0 to 2 percent slopes, occasionally flooded
21A	Hatboro loam, 0 to 2 percent slopes, frequently flooded (where drained and either protected from flooding or not frequently flooded during the growing season)
22B	Hayesville loam, 2 to 7 percent slopes
31B	Littlejoe silt loam, 2 to 7 percent slopes
32B	Minnieville loam, 2 to 7 percent slopes
46B	Thurmont loam, 2 to 7 percent slopes
49B	Unison loam, 2 to 7 percent slopes
50B	Warminster clay loam, 2 to 7 percent slopes
51A	Wingina loam, 0 to 2 percent slopes, occasionally flooded
52B	Wintergreen loam, 2 to 7 percent slopes
55A	Yogaville loam, 0 to 2 percent slopes, occasionally flooded (where drained and either protected from flooding or not frequently flooded during the growing season)

Table 8.-Woodland Management and Productivity

(Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available)

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Wind-throw hazard	Common trees	Site index	Volume*	
1D----- Arcola	3R	Moderate	Moderate	Slight	Slight	Northern red oak----	67	43	Eastern white pine, loblolly pine, yellow-poplar.
						Virginia pine-----	69	112	
						White oak-----	67	43	
						White pine-----	83	143	
1E----- Arcola	3R	Severe	Severe	Slight	Slight	Northern red oak----	67	43	Eastern white pine, loblolly pine, yellow-poplar.
						Virginia pine-----	69	112	
						White oak-----	67	43	
						White pine-----	83	143	
2A----- Batteau	11W	Slight	Slight	Slight	Slight	Loblolly pine-----	100	157	American sycamore, yellow-poplar, loblolly pine.
						Yellow-poplar-----	100	143	
						Sweetgum-----	110	128	
						Green ash-----	---	---	
						Red maple-----	---	---	
						American sycamore---	---	---	
3B----- Belvoir	8W	Slight	Moderate	Slight	Slight	Loblolly pine-----	80	112	Loblolly pine, yellow-poplar.
						Red maple-----	65	43	
						Yellow-poplar-----	80	70	
4B, 4C----- Buffstat	8A	Slight	Slight	Slight	Slight	Loblolly pine-----	80	112	Loblolly pine, eastern white pine.
						Northern red oak----	66	43	
						Virginia pine-----	69	112	
						Shortleaf pine-----	66	100	
4D----- Buffstat	8R	Moderate	Moderate	Slight	Slight	Loblolly pine-----	80	112	Loblolly pine, eastern white pine.
						Virginia pine-----	80	112	
						Shortleaf pine-----	69	112	
						Northern red oak----	66	43	
5C----- Bugley	6D	Slight	Slight	Severe	Moderate	Loblolly pine-----	70	85	Loblolly pine, shortleaf pine.
						Virginia pine-----	65	100	
						Shortleaf pine-----	60	85	
						Northern red oak----	65	43	
5D----- Bugley	6D	Moderate	Moderate	Severe	Moderate	Loblolly pine-----	70	85	Loblolly pine, shortleaf pine.
						Virginia pine-----	65	100	
						Shortleaf pine-----	60	85	
						Northern red oak----	65	43	
5E----- Bugley	6R	Severe	Severe	Severe	Moderate	Loblolly pine-----	70	85	Loblolly pine, shortleaf pine.
						Virginia pine-----	65	100	
						Shortleaf pine-----	60	85	
						Northern red oak----	65	43	
6E**: Catoctin-----	3R	Severe	Severe	Moderate	Moderate	Northern red oak----	60	43	Eastern white pine.
						Yellow-poplar-----	70	55	
						Chestnut oak-----	57	43	
Rock outcrop.									

See footnotes at end of table.

Table 8.--Woodland Management and Productivity--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Wind-throw hazard	Common trees	Site index	Volume*	
7B----- Chatuge	11W	Slight	Severe	Severe	Slight	Loblolly pine-----	100	157	Loblolly pine, yellow-poplar, eastern white pine.
						Yellow-poplar-----	95	100	
						Northern red oak----	80	56	
						Southern red oak----	75	56	
8A----- Codorus	5W	Slight	Moderate	Slight	Slight	Northern red oak----	90	70	Yellow-poplar, black walnut, white ash, eastern white pine.
						White ash-----	90	70	
						Yellow-poplar-----	100	112	
						Eastern white pine--	100	140	
9B, 9C----- Colleen	3A	Slight	Slight	Slight	Slight	Black walnut-----	100	---	Yellow-poplar, eastern white pine.
						Northern red oak----	60	43	
						Virginia pine-----	62	100	
						Shortleaf pine-----	52	70	
9D----- Colleen	3R	Moderate	Moderate	Slight	Slight	Chestnut oak-----	59	43	Yellow-poplar, eastern white pine.
						Northern red oak----	60	43	
						Virginia pine-----	62	100	
						Shortleaf pine-----	52	70	
10A----- Colvard	8A	Slight	Slight	Slight	Slight	Chestnut oak-----	59	43	Eastern white pine, yellow-poplar.
						Yellow-poplar-----	102	112	
						Eastern white pine--	83	157	
						Virginia pine-----	75	112	
11A----- Craigsville	4F	Slight	Slight	Slight	Slight	Shortleaf pine-----	75	112	Loblolly pine, eastern white pine, yellow-poplar.
						Northern red oak----	80	55	
						Yellow-poplar-----	95	100	
						Eastern white pine--	90	172	
12B, 12C----- Delanco	4W	Slight	Slight	Slight	Slight	Virginia pine-----	80	112	Loblolly pine, eastern white pine, yellow-poplar.
						Black oak-----	80	55	
						Yellow-poplar-----	90	85	
						Red maple-----	75	34	
13C----- Edneytown	8A	Slight	Slight	Slight	Slight	Loblolly pine-----	80	112	Loblolly pine, eastern white pine, yellow-poplar.
						Northern red oak----	80	55	
						Eastern white pine--	100	185	
						Yellow-poplar-----	90	85	
13D----- Edneytown	8R	Moderate	Moderate	Moderate	Slight	White oak-----	60	43	Loblolly pine, eastern white pine, yellow-poplar.
						Loblolly pine-----	80	112	
						Northern red oak----	---	---	
						Eastern white pine--	100	185	
13E----- Edneytown	8R	Severe	Severe	Moderate	Slight	Yellow-poplar-----	90	85	Loblolly pine, eastern white pine, yellow-poplar.
						White oak-----	60	43	
						Loblolly pine-----	80	112	
						Northern red oak----	80	55	
14C**: Edneytown-----	3A	Slight	Slight	Slight	Slight	Eastern white pine--	100	185	Shortleaf pine, eastern white pine, yellow-poplar.
						Yellow-poplar-----	90	85	
						White oak-----	60	43	
						Northern red oak----	80	55	

See footnotes at end of table.

Table 8.—Woodland Management and Productivity—Continued

Soil name and map symbol	Ordi- nation symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equip- ment limita- tion	Seedling mortal- ity	Wind- throw hazard	Common trees	Site index	Volume*	
14C**: Peaks-----	3X	Slight	Moderate	Slight	Slight	Northern red oak---- Virginia pine----- Eastern white pine--	62 57 80	43 85 140	Eastern white pine.
14D**: Edneytown-----	3R	Moderate	Moderate	Slight	Slight	Northern red oak---- Eastern white pine-- Yellow-poplar----- White oak-----	80 100 90 60	55 185 85 43	Shortleaf pine, eastern white pine, yellow- poplar.
Peaks-----	3R	Slight	Moderate	Slight	Slight	Northern red oak---- Virginia pine----- Eastern white pine--	67 60 80	43 85 140	Eastern white pine.
14E**, 14F**: Edneytown-----	3R	Severe	Severe	Slight	Slight	Northern red oak---- Eastern white pine-- Yellow-poplar----- White oak-----	80 100 90 60	70 185 85 43	Shortleaf pine, eastern white pine, yellow- poplar.
Peaks-----	3R	Moderate	Severe	Slight	Slight	Northern red oak---- Virginia pine----- Eastern white pine--	67 60 80	43 85 140	Eastern white pine.
15B, 15C----- Elioak	4C	Slight	Moderate	Slight	Slight	White oak----- Yellow-poplar----- Virginia pine----- Shortleaf pine-----	75 90 75 70	55 85 112 112	Loblolly pine, yellow-poplar, eastern white pine.
15D----- Elioak	4C	Moderate	Severe	Slight	Slight	White oak----- Yellow-poplar----- Virginia pine----- Shortleaf pine-----	75 90 75 70	55 85 112 112	Loblolly pine, yellow-poplar, eastern white pine.
16C----- Elioak	4C	Slight	Moderate	Slight	Slight	White oak----- Yellow-poplar----- Virginia pine----- Shortleaf pine-----	75 90 75 70	55 85 112 112	Loblolly pine, yellow-poplar, eastern white pine.
16D----- Elioak	4C	Moderate	Severe	Slight	Slight	White oak----- Yellow-poplar----- Virginia pine----- Shortleaf pine-----	75 90 75 70	55 85 112 112	Loblolly pine, yellow-poplar, eastern white pine.
17B----- Elsinboro	4A	Slight	Slight	Slight	Slight	Black oak----- Yellow-poplar----- Virginia pine----- Red maple-----	80 90 80 75	55 85 112 34	Eastern white pine, yellow- poplar, loblolly pine.
18C----- Fauquier	4C	Slight	Moderate	Slight	Slight	Northern red oak---- Yellow-poplar----- Chestnut oak-----	100 120 80	55 140 55	Yellow-poplar, eastern white pine, loblolly pine.
18D----- Fauquier	4C	Moderate	Severe	Slight	Slight	Northern red oak---- Yellow-poplar----- Chestnut oak-----	100 120 80	55 140 55	Yellow-poplar, eastern white pine, loblolly pine.

See footnotes at end of table.

Table 8.—Woodland Management and Productivity—Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Wind-throw hazard	Common trees	Site index	Volume*	
18E----- Fauquier	4R	Severe	Severe	Slight	Slight	Northern red oak----	100	55	Yellow-poplar, eastern white pine, loblolly pine.
						Yellow-poplar-----	120	140	
						Chestnut oak-----	80	55	
19A----- Galtsmill	A	Slight	Slight	Slight	Slight	Loblolly pine-----	96	140	Loblolly pine, yellow-poplar, black walnut, eastern white pine.
						Yellow-poplar-----	15	128	
						Sweetgum-----	85	85	
						American sycamore---	---	---	
						Red maple-----	---	---	
20D----- Glenelg	4R	Moderate	Moderate	Slight	Slight	Black oak-----	78	55	Eastern white pine, shortleaf pine, yellow-poplar.
						Yellow-poplar-----	87	85	
						Virginia pine-----	70	112	
						Shortleaf pine-----	70	112	
21A----- Hatboro	3W	Slight	Severe	Slight	Moderate	Red maple-----	60	43	Eastern white pine, white spruce, loblolly pine.
						American sycamore---	60	43	
						Pin oak-----	60	43	
22B, 22C----- Hayesville	7A	Slight	Slight	Slight	Slight	Yellow-poplar-----	93	100	Eastern white pine, shortleaf pine, Fraser fir, Scotch pine, loblolly pine.
						Eastern white pine--	85	157	
						Northern red oak----	---	55	
						Shortleaf pine-----	70	112	
						Virginia pine-----	74	112	
22D----- Hayesville	7R	Moderate	Moderate	Slight	Slight	Yellow-poplar-----	93	100	Eastern white pine, loblolly pine, Scotch pine.
						Eastern white pine--	85	157	
						Northern red oak----	---	55	
						Shortleaf pine-----	70	112	
						Virginia pine-----	74	112	
22E----- Hayesville	7R	Severe	Severe	Slight	Slight	Yellow-poplar-----	93	100	Eastern white pine, shortleaf pine, Fraser fir, Scotch pine.
						Eastern white pine--	85	157	
						Northern red oak----	---	55	
						Shortleaf pine-----	70	112	
						Virginia pine-----	74	112	
23B, 23C----- Hayesville	6C	Slight	Moderate	Moderate	Slight	Yellow-poplar-----	85	85	Eastern white pine, shortleaf pine, Fraser fir.
						Eastern white pine--	77	140	
						Northern red oak----	---	55	
						Shortleaf pine-----	68	100	
						Virginia pine-----	70	112	
23D----- Hayesville	6R	Moderate	Moderate	Moderate	Slight	Yellow-poplar-----	85	85	Eastern white pine, shortleaf pine, Fraser fir.
						Eastern white pine--	85	157	
						Northern red oak----	---	55	
						Shortleaf pine-----	68	100	
						Virginia pine-----	70	112	

See footnotes at end of table.

Table 8.—Woodland Management and Productivity—Continued

Soil name and map symbol	Ordi- nation symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equip- ment limita- tion	Seedling mortal- ity	Wind- throw hazard	Common trees	Site index	Volume*	
23E----- Hayesville	6R	Severe	Severe	Moderate	Slight	Yellow-poplar-----	85	85	Eastern white pine, loblolly pine, Scotch pine.
						Eastern white pine--	77	140	
						Northern red oak----	---	55	
						Shortleaf pine-----	68	100	
						Virginia pine-----	70	112	
24C----- Hayesville	6A	Slight	Slight	Slight	Slight	Yellow-poplar-----	90	85	Eastern white pine, loblolly pine, Scotch pine.
						Shortleaf pine-----	70	112	
						Virginia pine-----	74	112	
						Eastern white pine--	85	157	
						Northern red oak----	---	---	
24D----- Hayesville	6R	Moderate	Moderate	Slight	Slight	Yellow-poplar-----	90	85	Eastern white pine, loblolly pine, Scotch pine.
						Shortleaf pine-----	70	112	
						Virginia pine-----	74	112	
						Eastern white pine--	92	152	
						Northern red oak----	80	55	
24E----- Hayesville	6R	Severe	Severe	Slight	Slight	Yellow-poplar-----	90	85	Eastern white pine, loblolly pine, Scotch pine.
						Shortleaf pine-----	70	112	
						Virginia pine-----	74	112	
						Eastern white pine--	92	157	
						Northern red oak----	80	55	
25C----- Hazel	3D	Slight	Slight	Moderate	Moderate	Northern red oak----	60	43	Eastern white pine, loblolly pine.
						Shortleaf pine-----	60	85	
						Virginia pine-----	60	85	
						Chestnut oak-----	57	43	
25D----- Hazel	3D	Moderate	Moderate	Moderate	Moderate	Northern red oak----	60	43	Eastern white pine, loblolly pine.
						Shortleaf pine-----	60	85	
						Virginia pine-----	60	85	
						Chestnut oak-----	57	43	
25E----- Hazel	2R	Severe	Severe	Severe	Moderate	Northern red oak----	50	34	Eastern white pine, loblolly pine.
						Shortleaf pine-----	50	70	
						Virginia pine-----	50	70	
						Chestnut oak-----	55	43	
26D----- Hazel	3D	Moderate	Moderate	Moderate	Moderate	Northern red oak----	60	43	Eastern white pine, loblolly pine.
						Virginia pine-----	60	85	
						Shortleaf pine-----	60	85	
						Chestnut oak-----	57	43	
26E----- Hazel	3R	Severe	Severe	Moderate	Moderate	Northern red oak----	60	43	Eastern white pine, loblolly pine.
						Virginia pine-----	60	85	
						Shortleaf pine-----	60	85	
						Chestnut oak-----	57	43	
27B, 27C----- Jackland	3C	Slight	Moderate	Moderate	Moderate	Northern red oak----	60	43	Loblolly pine.
						Loblolly pine-----	70	85	
						Yellow-poplar-----	74	43	
						Virginia pine-----	60	85	
28B----- Lew	4F	Slight	Slight	Slight	Slight	Northern red oak----	80	55	Yellow-poplar, eastern white pine.
						Yellow-poplar-----	90	85	
						Eastern white pine--	90	172	

See footnotes at end of table.

Table 8.--Woodland Management and Productivity--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Wind-throw hazard	Common trees	Site index	Volume*	
29B, 30C----- Lew	4X	Slight	Severe	Severe	Slight	Northern red oak----	80	56	Eastern white pine, yellow-poplar.
						Yellow-poplar-----	90	85	
						Eastern white pine--	90	172	
31B, 31C----- Littlejoe	8A	Slight	Slight	Slight	Slight	Loblolly pine-----	78	112	Loblolly pine, eastern white pine, yellow-poplar.
						Northern red oak----	78	55	
						Virginia pine-----	68	100	
						Yellow-poplar-----	83	70	
32B----- Minnieville	4C	Slight	Moderate	Slight	Slight	Northern red oak----	70	55	Eastern white pine, yellow-poplar, loblolly pine.
						Shortleaf pine-----	70	112	
						Virginia pine-----	80	112	
						Yellow-poplar-----	70	55	
						White oak-----	70	55	
32D----- Minnieville	4R	Moderate	Moderate	Slight	Slight	Northern red oak----	70	55	Eastern white pine, yellow-poplar, loblolly pine.
						Shortleaf pine-----	70	112	
						Virginia pine-----	80	112	
						Yellow-poplar-----	70	55	
						White oak-----	70	55	
32E----- Minnieville	4R	Severe	Severe	Slight	Slight	Northern red oak----	70	55	Eastern white pine, yellow-poplar, loblolly pine.
						Shortleaf pine-----	70	112	
						Virginia pine-----	80	112	
						Yellow-poplar-----	70	55	
						White oak-----	70	55	
33C**: Myersville-----	5X	Slight	Moderate	Slight	Slight	Northern red oak----	85	70	Yellow-poplar, black walnut, eastern white pine.
						Yellow-poplar-----	95	100	
Catoclin-----	6X	Slight	Slight	Moderate	Moderate	Northern red oak----	60	43	Eastern white pine.
						Yellow-poplar-----	70	55	
						Chestnut oak-----	57	43	
33D**: Myersville-----	5X	Moderate	Moderate	Slight	Slight	Northern red oak----	85	70	Black walnut, eastern white pine.
						Yellow-poplar-----	95	100	
Catoclin-----	6X	Moderate	Moderate	Moderate	Moderate	Northern red oak----	60	43	Eastern white pine, shortleaf pine.
						Yellow-poplar-----	70	55	
						Chestnut oak-----	57	43	
33E**: Myersville-----	5R	Severe	Severe	Slight	Slight	Northern red oak----	85	70	Black walnut, eastern white pine.
						Yellow-poplar-----	95	100	
Catoclin-----	6R	Severe	Severe	Moderate	Moderate	Northern red oak----	60	43	Eastern white pine, shortleaf pine.
						Yellow-poplar-----	70	55	
						Chestnut oak-----	57	43	

See footnotes at end of table.

Table 8.--Woodland Management and Productivity--Continued

Soil name and map symbol	Ordi- nation symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equip- ment limita- tion	Seedling mortal- ity	Wind- throw hazard	Common trees	Site index	Volume*	
34C----- Occoquan	3A	Slight	Slight	Moderate	Slight	Northern red oak----	62	43	Eastern white pine, yellow- poplar, hemlock, shortleaf pine.
						Virginia pine-----	60	85	
						White oak-----	60	43	
						Yellow-poplar-----	70	55	
34D----- Occoquan	3R	Moderate	Moderate	Moderate	Slight	Northern red oak----	62	43	Eastern white pine, yellow- poplar.
						Virginia pine-----	60	85	
						White oak-----	60	43	
						Yellow-poplar-----	70	55	
34E----- Occoquan	3R	Severe	Severe	Moderate	Slight	Northern red oak----	62	43	Eastern white pine, yellow- poplar.
						Virginia pine-----	60	85	
						White oak-----	60	43	
						Yellow-poplar-----	70	55	
35D----- Occoquan	3R	Moderate	Moderate	Moderate	Slight	Northern red oak----	62	43	Loblolly pine, eastern white pine.
						Virginia pine-----	60	85	
						White oak-----	60	43	
35E----- Occoquan	3R	Severe	Severe	Moderate	Slight	Northern red oak----	62	43	Loblolly pine, eastern white pine.
						Virginia pine-----	60	85	
						White oak-----	60	43	
37A----- Pineywoods	3W	Slight	Moderate	Moderate	Slight	Northern red oak----	60	43	Loblolly pine, eastern white pine.
						Virginia pine-----	60	85	
						Willow oak-----	60	43	
						Red maple-----	55	43	
39C----- Saunook	8A	Slight	Slight	Slight	Slight	Yellow-poplar-----	107	112	Yellow-poplar, eastern white pine, northern red oak.
						Eastern white pine--	103	157	
						Northern red oak----	80	55	
						White oak-----	83	55	
						Red maple-----	80	55	
39D----- Saunook	8R	Moderate	Moderate	Slight	Slight	Yellow-poplar-----	107	112	Yellow-poplar, eastern white pine, northern red oak.
						Eastern white pine--	103	157	
						Northern red oak----	90	55	
						White oak-----	83	55	
						Red maple-----	80	55	
40C----- Saunook	8A	Slight	Slight	Slight	Slight	Yellow-poplar-----	107	112	Yellow-poplar, eastern white pine, northern red oak.
						Eastern white pine--	103	157	
						Northern red oak----	90	55	
						White oak-----	83	55	
						Red maple-----	80	55	
40D----- Saunook	8R	Moderate	Moderate	Slight	Slight	Yellow-poplar-----	107	112	Yellow-poplar, eastern white pine, northern red oak.
						Eastern white pine--	103	157	
						Northern red oak----	90	55	
						White oak-----	83	55	
						Red maple-----	80	55	

See footnotes at end of table.

Table 8.—Woodland Management and Productivity—Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Wind-throw hazard	Common trees	Site index	Volume*	
40E----- Saunook	8R	Severe	Severe	Slight	Slight	Yellow-poplar----- Eastern white pine-- Northern red oak---- White oak----- Red maple-----	107 103 90 83 80	112 157 55 55 55	Yellow-poplar, eastern white pine, northern red oak.
41B----- Sketerville	3A	Slight	Slight	Slight	Slight	Northern red oak---- Virginia pine----- Shortleaf pine----- Willow oak-----	55 65 65 ---	43 100 100 ---	Yellow-poplar, eastern white pine, loblolly pine.
42C----- Spriggs	3A	Slight	Slight	Moderate	Slight	Northern red oak---- Virginia pine----- White oak-----	62 60 60	43 85 43	Loblolly pine, eastern white pine.
42D----- Spriggs	3R	Moderate	Moderate	Moderate	Slight	Northern red oak---- Virginia pine----- White oak-----	62 60 60	43 85 43	Loblolly pine, eastern white pine.
42E----- Spriggs	3R	Severe	Severe	Moderate	Slight	Northern red oak---- Virginia pine----- White oak-----	62 60 60	43 85 43	Loblolly pine, eastern white pine.
43A----- Suches	9A	Slight	Slight	Slight	Slight	Loblolly pine----- Shortleaf pine----- Eastern white pine-- Northern red oak---- Yellow-poplar-----	90 80 100 90 105	128 128 185 55 112	Loblolly pine, eastern white pine, northern red oak, yellow-poplar.
44C**: Sylco-----	3X	Slight	Severe	Slight	Slight	Chestnut oak----- Northern red oak---- Eastern white pine--	60 55 70	43 43 112	Eastern white pine.
Sylvatus-----	3D	Slight	Slight	Moderate	Moderate	Chestnut oak----- Northern red oak---- Yellow-poplar-----	60 55 70	43 43 55	Eastern white pine.
44D**: Sylco-----	3X	Slight	Severe	Slight	Slight	Chestnut oak----- Northern red oak---- Eastern white pine--	60 55 70	43 43 112	Eastern white, pine.
Sylvatus-----	3R	Moderate	Moderate	Moderate	Moderate	Chestnut oak----- Northern red oak---- Yellow-poplar-----	60 55 70	43 43 55	Eastern white pine.
44E**: Sylco-----	6R	Moderate	Severe	Slight	Slight	Chestnut oak----- Northern red oak---- Eastern white pine--	60 55 70	43 43 112	Eastern white, pine.
Sylvatus-----	3R	Severe	Severe	Moderate	Moderate	Chestnut oak----- Northern red oak---- Yellow-poplar-----	60 55 70	43 43 55	Eastern white pine.

See footnotes at end of table.

Table 8.--Woodland Management and Productivity--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Wind-throw hazard	Common trees	Site index	Volume*	
45E**, 45F**: Sylvatus-----	3R	Severe	Severe	Moderate	Moderate	Chestnut oak----- Northern red oak---- Yellow-poplar-----	60 55 70	43 43 55	Eastern white pine.
Rock outcrop.									
46B, 46C----- Thurmont	4A	Slight	Slight	Slight	Slight	Northern red oak---- Yellow-poplar----- Eastern white pine-- Shortleaf pine-----	76 88 88 77	55 85 157 128	Eastern white pine, yellow-poplar, loblolly pine.
46D----- Thurmont	4R	Moderate	Moderate	Slight	Slight	Northern red oak---- Yellow-poplar----- Eastern white pine-- Shortleaf pine-----	76 88 88 77	55 85 157 128	Eastern white pine, yellow-poplar, loblolly pine.
47B, 47C----- Thurmont	4X	Slight	Moderate	Moderate	Slight	Northern red oak---- Yellow-poplar----- Eastern white pine-- Shortleaf pine-----	76 88 88 77	55 85 157 128	Eastern white pine, yellow-poplar, loblolly pine.
47D----- Thurmont	4R	Moderate	Moderate	Slight	Slight	Northern red oak---- Yellow-poplar----- Eastern white pine-- Shortleaf pine-----	76 88 88 77	55 85 157 128	Eastern white pine, shortleaf pine, loblolly pine.
49B, 49C----- Unison	5A	Slight	Slight	Slight	Slight	Northern red oak---- Yellow-poplar----- Virginia pine----- Red maple-----	85 95 80 75	70 100 112 55	Yellow-poplar, eastern white pine, loblolly pine.
49D----- Unison	5R	Slight	Moderate	Slight	Slight	Northern red oak---- Yellow-poplar----- Virginia pine----- Red maple-----	85 95 80 75	70 100 112 55	Yellow-poplar, eastern white pine, loblolly pine.
50B, 50C----- Warminster	4A	Slight	Slight	Slight	Slight	Northern red oak---- Yellow-poplar----- Virginia pine----- Shortleaf pine-----	76 90 75 80	55 85 112 128	Loblolly pine, yellow-poplar.
50D----- Warminster	4R	Moderate	Moderate	Moderate	Slight	Northern red oak---- Yellow-poplar----- Virginia pine----- Shortleaf pine-----	76 90 75 80	55 85 112 128	Loblolly pine, yellow-poplar.
51A----- Wingina	11A	Slight	Slight	Slight	Slight	Loblolly pine----- Yellow-poplar----- Sweetgum----- River birch----- Green ash----- American sycamore---	100 110 100 --- --- ---	157 128 140 --- --- ---	Loblolly pine, yellow-poplar, American sycamore, green ash, black walnut.
52B, 52C----- Wintergreen	4A	Slight	Moderate	Slight	Slight	Northern red oak---- Yellow-poplar----- Eastern white pine--	80 90 95	55 85 172	Yellow-poplar, eastern white pine, loblolly pine.

See footnotes at end of table.

Table 8.--Woodland Management and Productivity--Continued

Soil name and map symbol	Ordi- nation symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equip- ment limita- tion	Seedling mortal- ity	Wind- throw hazard	Common trees	Site index	Volume*	
52D----- Wintergreen	4R	Moderate	Moderate	Slight	Slight	Northern red oak---- Yellow-poplar----- Eastern white pine--	80 90 95	55 85 172	Yellow-poplar, eastern white pine, loblolly pine.
53B, 53C----- Wintergreen	4C	Slight	Moderate	Moderate	Slight	Northern red oak---- Yellow-poplar----- Eastern white pine--	80 90 95	55 85 172	Yellow-poplar, eastern white pine, loblolly pine.
53D----- Wintergreen	4R	Moderate	Moderate	Moderate	Slight	Northern red oak---- Yellow-poplar----- Eastern white pine--	80 90 95	55 85 172	Yellow-poplar, eastern white pine, loblolly pine.
54C----- Wintergreen	4X	Slight	Slight	Slight	Slight	Northern red oak---- Yellow-poplar----- Eastern white pine--	80 90 95	55 85 172	Yellow-poplar, eastern white pine, loblolly pine.
55A----- Yogaville	8W	Slight	Moderate	Moderate	Moderate	Sweetgum----- Yellow-poplar----- Red maple----- American sycamore--- River birch-----	94 100 --- --- ---	112 112 --- --- ---	Yellow-poplar, sweetgum, American sycamore, loblolly pine.

\* Volume is the yield in cubic feet per acre per year calculated at the age of culmination of mean annual increment for fully stocked natural stands.

\*\* See description of the map unit for composition and behavior characteristics of the map unit.

Table 9.--Recreational Development

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated)

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
1D----- Arcola	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.	Severe: slope.
1E----- Arcola	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Severe: slope.
2A----- Batteau	Severe: flooding, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, flooding.
3B----- Belvoir	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, droughty.
4B----- Buffstat	Slight-----	Slight-----	Moderate: slope, small stones.	Severe: erodes easily.	Slight.
4C----- Buffstat	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
4D----- Buffstat	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
5C----- Bugley	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, small stones, depth to rock.	Slight-----	Severe: depth to rock.
5D----- Bugley	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, small stones, depth to rock.	Moderate: slope.	Severe: depth to rock.
5E----- Bugley	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope.	Severe: depth to rock.
6E*: Catoctin-----	Severe: slope, large stones.	Severe: slope, large stones.	Severe: large stones, slope.	Severe: slope.	Severe: large stones, slope.
Rock outcrop-----	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.	Severe: depth to rock.
7B----- Chatuge	Severe: flooding, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.

See footnote at end of table.

Table 9.—Recreational Development—Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
8A----- Codorus	Severe: flooding, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: flooding, wetness.
9B----- Colleen	Moderate: small stones, percs slowly.	Moderate: small stones, percs slowly.	Severe: small stones.	Slight-----	Moderate: small stones.
9C----- Colleen	Moderate: slope, small stones, percs slowly.	Moderate: slope, small stones, percs slowly.	Severe: slope, small stones.	Slight-----	Moderate: small stones, slope.
9D----- Colleen	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.	Severe: slope.
10A----- Colvard	Severe: flooding.	Slight-----	Moderate: small stones, flooding.	Slight-----	Moderate: droughty, flooding.
11A----- Craigsville	Severe: flooding, large stones.	Severe: large stones.	Severe: flooding, small stones.	Severe: large stones.	Severe: large stones, flooding.
12B----- Delanco	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
12C----- Delanco	Severe: wetness.	Moderate: slope, wetness, percs slowly.	Severe: slope, wetness.	Moderate: wetness.	Moderate: wetness, slope.
13C----- Edneytown	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Moderate: slope.
13D----- Edneytown	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
13E----- Edneytown	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
14C*: Edneytown-----	Severe: large stones.	Severe: large stones.	Severe: large stones, slope.	Slight-----	Moderate: large stones, slope.
Peaks-----	Severe: large stones, small stones.	Severe: large stones, small stones.	Severe: large stones, slope, small stones.	Moderate: large stones.	Severe: small stones, large stones.
14D*, 14E*, 14F*: Edneytown-----	Severe: slope, large stones.	Severe: slope, large stones.	Severe: large stones, slope.	Severe: slope.	Severe: slope.

See footnote at end of table.

Table 9.-Recreational Development-Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
14D*, 14E*, 14F*: Peaks-----	Severe: slope, large stones, small stones.	Severe: slope, large stones, small stones.	Severe: large stones, slope, small stones.	Severe: slope.	Severe: small stones, large stones, slope.
15B----- Elioak	Slight-----	Slight-----	Moderate: slope, small stones.	Slight-----	Moderate: large stones, droughty.
15C----- Elioak	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Moderate: large stones, droughty, slope.
15D----- Elioak	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
16C----- Elioak	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Moderate: large stones, droughty, slope.
16D----- Elioak	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
17B----- Elsinboro	Severe: flooding.	Slight-----	Moderate: slope, small stones.	Severe: erodes easily.	Slight.
18C----- Fauquier	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: large stones, slope, small stones.	Slight-----	Moderate: slope, large stones.
18D----- Fauquier	Severe: slope.	Severe: slope.	Severe: large stones, slope, small stones.	Moderate: slope.	Severe: slope.
18E----- Fauquier	Severe: slope.	Severe: slope.	Severe: large stones, slope, small stones.	Severe: slope.	Severe: slope.
19A----- Galtsmill	Severe: flooding.	Slight-----	Moderate: small stones, flooding.	Slight-----	Moderate: flooding.
20D----- Glenelg	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
21A----- Hatboro	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
22B----- Hayesville	Slight-----	Slight-----	Moderate: slope, small stones.	Slight-----	Slight.

See footnote at end of table.

Table 9.-Recreational Development-Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
22C----- Hayesville	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Moderate: slope.
22D----- Hayesville	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
22E----- Hayesville	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
23B----- Hayesville	Slight-----	Slight-----	Moderate: slope, small stones.	Slight-----	Slight.
23C----- Hayesville	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Moderate: slope.
23D----- Hayesville	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
23E----- Hayesville	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
24C----- Hayesville	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: large stones, slope.	Moderate: large stones.	Severe: large stones.
24D----- Hayesville	Severe: slope.	Severe: slope.	Severe: large stones, slope.	Moderate: large stones, slope.	Severe: large stones, slope.
24E----- Hayesville	Severe: slope.	Severe: slope.	Severe: large stones, slope.	Severe: slope.	Severe: large stones, slope.
25C----- Hazel	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Slight-----	Moderate: small stones, droughty, slope.
25D----- Hazel	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.	Severe: slope.
25E----- Hazel	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Severe: slope.
26D----- Hazel	Severe: slope.	Severe: slope.	Severe: large stones, slope, small stones.	Moderate: slope.	Severe: slope.
26E----- Hazel	Severe: slope.	Severe: slope.	Severe: large stones, slope, small stones.	Severe: slope.	Severe: slope.
27B----- Jackland	Severe: wetness, percs slowly.	Severe: percs slowly.	Severe: small stones, wetness.	Moderate: wetness.	Moderate: small stones, wetness.

See footnote at end of table.

Table 9.—Recreational Development—Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
27C----- Jackland	Severe: wetness, percs slowly.	Severe: percs slowly.	Severe: slope, small stones, wetness.	Moderate: wetness.	Moderate: small stones, wetness, slope.
28B----- Lew	Slight-----	Slight-----	Moderate: slope, small stones.	Severe: erodes easily.	Moderate: large stones.
29B----- Lew	Severe: small stones.	Severe: small stones.	Severe: large stones, small stones.	Severe: large stones, small stones.	Severe: small stones, large stones.
30C----- Lew	Severe: small stones.	Severe: small stones.	Severe: large stones, slope, small stones.	Severe: large stones, small stones.	Severe: small stones, large stones.
30D----- Lew	Severe: slope, small stones.	Severe: slope, small stones.	Severe: large stones, slope, small stones.	Severe: large stones, small stones.	Severe: small stones, large stones, slope.
30E----- Lew	Severe: slope, small stones.	Severe: slope, small stones.	Severe: large stones, slope, small stones.	Severe: large stones, slope.	Severe: small stones, large stones, slope.
31B----- Littlejoe	Slight-----	Slight-----	Moderate: slope, small stones.	Severe: erodes easily.	Slight.
31C----- Littlejoe	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
32B----- Minnieville	Slight-----	Slight-----	Moderate: slope, small stones.	Severe: erodes easily.	Slight.
32C----- Minnieville	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
32D----- Minnieville	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
32E----- Minnieville	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
33C*: Myersville-----	Severe: large stones.	Severe: large stones.	Severe: large stones, slope.	Moderate: large stones.	Severe: large stones.
Catoctin-----	Severe: large stones.	Severe: large stones.	Severe: large stones, slope.	Moderate: large stones.	Severe: large stones.

See footnote at end of table.

Table 9.—Recreational Development—Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
33D*, 33E*: Myersville-----	Severe: slope, large stones.	Severe: slope, large stones.	Severe: large stones, slope.	Severe: slope.	Severe: large stones, slope.
Catoctin-----	Severe: slope, large stones.	Severe: slope, large stones.	Severe: large stones, slope.	Severe: slope.	Severe: large stones, slope.
34C----- Occoquan	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
34D----- Occoquan	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
34E----- Occoquan	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
35D----- Occoquan	Severe: slope.	Severe: slope.	Severe: large stones, slope, small stones.	Moderate: slope.	Severe: slope.
35E----- Occoquan	Severe: slope.	Severe: slope.	Severe: large stones, slope, small stones.	Severe: slope.	Severe: slope.
36D*, 36E*, 36F*: Peaks-----	Severe: slope, large stones, small stones.	Severe: slope, large stones, small stones.	Severe: large stones, slope, small stones.	Severe: slope.	Severe: small stones, large stones, slope.
Rock outcrop-----	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.	Severe: depth to rock.
37A----- Pineywoods	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
38*----- Pits	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Slight-----	Severe: depth to rock.
39C----- Saunook	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Moderate: slope.
39D----- Saunook	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
40C----- Saunook	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: slope, small stones.	Moderate: large stones.	Moderate: small stones, slope.
40D----- Saunook	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: large stones, slope.	Severe: slope.

See footnote at end of table.

Table 9.—Recreational Development—Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
40E----- Saunook	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Severe: slope.
41B----- Sketerville	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, small stones, wetness.	Moderate: wetness.	Moderate: wetness.
42C----- Spriggs	Moderate: slope, large stones, small stones.	Moderate: slope, large stones, small stones.	Severe: large stones, slope, small stones.	Slight-----	Moderate: small stones, large stones, slope.
42D----- Spriggs	Severe: slope.	Severe: slope.	Severe: large stones, slope, small stones.	Moderate: slope.	Severe: slope.
42E----- Spriggs	Severe: slope.	Severe: slope.	Severe: large stones, slope, small stones.	Severe: slope.	Severe: slope.
43A----- Suches	Severe: flooding.	Moderate: flooding.	Severe: flooding.	Moderate: flooding.	Severe: flooding.
44C*: Sylco-----	Severe: large stones.	Severe: large stones.	Severe: large stones, slope, small stones.	Moderate: large stones.	Severe: large stones.
Sylvatus-----	Severe: large stones, small stones.	Severe: large stones, small stones.	Severe: large stones, slope, small stones.	Severe: small stones.	Severe: small stones, large stones.
44D*, 44E*: Sylco-----	Severe: slope, large stones.	Severe: slope, large stones.	Severe: large stones, slope, small stones.	Severe: slope.	Severe: large stones, slope.
Sylvatus-----	Severe: slope, large stones, small stones.	Severe: slope, large stones, small stones.	Severe: large stones, slope, small stones.	Severe: slope, small stones.	Severe: small stones, large stones, slope.
45E*, 45F*: Sylvatus-----	Severe: slope, large stones, small stones.	Severe: slope, large stones, small stones.	Severe: large stones, slope, small stones.	Severe: slope, small stones.	Severe: small stones, large stones, slope.
Rock outcrop-----	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.	Severe: depth to rock.

See footnote at end of table.

Table 9.—Recreational Development—Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
46B----- Thurmont	Slight-----	Slight-----	Moderate: slope, small stones.	Slight-----	Slight.
46C----- Thurmont	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Moderate: slope.
46D----- Thurmont	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
47B----- Thurmont	Moderate: large stones.	Moderate: large stones.	Severe: large stones.	Slight-----	Moderate: large stones.
47C----- Thurmont	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: large stones, slope.	Slight-----	Moderate: large stones, slope.
47D----- Thurmont	Severe: slope.	Severe: slope.	Severe: large stones, slope.	Moderate: slope.	Severe: slope.
48. Udorthents					
49B----- Unison	Slight-----	Slight-----	Moderate: slope, small stones.	Slight-----	Moderate: large stones.
49C----- Unison	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Moderate: large stones, slope.
49D----- Unison	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
50B----- Warminster	Slight-----	Slight-----	Moderate: slope, small stones.	Severe: erodes easily.	Slight.
50C----- Warminster	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
50D----- Warminster	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
51A----- Wingina	Severe: flooding.	Slight-----	Moderate: small stones, flooding.	Slight-----	Moderate: flooding.
52B----- Wintergreen	Slight-----	Slight-----	Moderate: slope, small stones.	Slight-----	Slight.
52C----- Wintergreen	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Moderate: slope.
52D----- Wintergreen	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.

See footnote at end of table.

Table 9.—Recreational Development—Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
53B----- Wintergreen	Slight-----	Slight-----	Moderate: slope, small stones.	Slight-----	Slight.
53C----- Wintergreen	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Moderate: slope.
53D----- Wintergreen	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
54C----- Wintergreen	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: large stones, slope.	Slight-----	Moderate: large stones, slope.
55A----- Yogaville	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.

\* See description of the map unit for composition and behavior characteristics of the map unit.

Table 10.--Wildlife Habitat

(See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated)

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hardwood trees	Conif- erous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
1D----- Arcola	Poor	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
1E----- Arcola	Very poor.	Poor	Good	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
2A----- Batteau	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
3B----- Belvoir	Fair	Good	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
4B----- Buffstat	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
4C----- Buffstat	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
4D----- Buffstat	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
5C, 5D, 5E----- Bugley	Very poor.	Poor	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.
6E*: Catoctin-----	Very poor.	Very poor.	Good	Fair	Fair	Very poor.	Very poor.	Very poor.	Fair	Very poor.
Rock outcrop-----	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
7B----- Chatuge	Poor	Fair	Fair	Good	Good	Good	Fair	Fair	Good	Fair.
8A----- Codorus	Fair	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
9B----- Colleen	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
9C----- Colleen	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
9D----- Colleen	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
10A----- Colvard	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Poor.
11A----- Craigsville	Poor	Fair	Fair	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
12B----- Delanco	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.

See footnote at end of table.

Table 10.—Wildlife Habitat—Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hardwood trees	Conif- erous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
12C----- Delanco	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
13C----- Edneytown	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
13D----- Edneytown	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
13E----- Edneytown	Very poor.	Very poor.	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
14C*: Edneytown-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Peaks-----	Very poor.	Very poor.	Good	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
14D*, 14E*, 14F*: Edneytown-----	Very poor.	Very poor.	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
Peaks-----	Very poor.	Very poor.	Good	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
15B----- Elioak	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
15C----- Elioak	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
15D----- Elioak	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
16C----- Elioak	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
16D----- Elioak	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
17B----- Elsinboro	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
18C, 18D----- Fauquier	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
18E----- Fauquier	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
19A----- Galtsmill	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Very poor.
20D----- Glenelg	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
21A----- Hatboro	Poor	Fair	Fair	Fair	Fair	Good	Fair	Fair	Fair	Fair.

See footnote at end of table.

Table 10.—Wildlife Habitat—Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hardwood trees	Conif- erous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
22B----- Hayesville	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
22C----- Hayesville	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
22D----- Hayesville	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
22E----- Hayesville	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
23B----- Hayesville	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
23C----- Hayesville	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
23D----- Hayesville	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
23E, 24C, 24D, 24E- Hayesville	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
25C----- Hazel	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
25D----- Hazel	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
25E----- Hazel	Very poor.	Very poor.	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
26D----- Hazel	Very poor.	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
26E----- Hazel	Very poor.	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
27B----- Jackland	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
27C----- Jackland	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
28B----- Lew	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
29B----- Lew	Very poor.	Very poor.	Good	Good	Good	Very poor.	Very poor.	Poor	Fair	Very poor.
30C, 30D, 30E----- Lew	Very poor.	Very poor.	Good	Good	Good	Very poor.	Very poor.	Poor	Fair	Very poor.
31B----- Littlejoe	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
31C----- Littlejoe	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.

See footnote at end of table.

Table 10.—Wildlife Habitat—Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hardwood trees	Conif- erous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
32B----- Minnieville	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
32C----- Minnieville	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
32D----- Minnieville	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
32E----- Minnieville	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
33C*: Myersville-----	Very poor.	Very poor.	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
Catoctin-----	Very poor.	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
33D*: Myersville-----	Very poor.	Very poor.	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
Catoctin-----	Very poor.	Poor	Good	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
33E*: Myersville-----	Very poor.	Very poor.	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
Catoctin-----	Very poor.	Very poor.	Good	Fair	Fair	Very poor.	Very poor.	Very poor.	Fair	Very poor.
34C----- Occoquan	Fair	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
34D----- Occoquan	Poor	Poor	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
34E, 35D, 35E----- Occoquan	Very poor.	Poor	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
36D*, 36E*, 36F*: Peaks-----	Very poor.	Very poor.	Good	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
Rock outcrop-----	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
37A----- Pineywoods	Poor	Fair	Fair	Fair	Fair	Good	Fair	Fair	Fair	Fair.
38*----- Pits	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
39C----- Saunook	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.

See footnote at end of table.

Table 10.—Wildlife Habitat—Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hardwood trees	Conif- erous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
39D----- Saunook	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Fair	Very poor.
40C----- Saunook	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
40D----- Saunook	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Fair	Very poor.
40E----- Saunook	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Fair	Very poor.
41B----- Sketerville	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
42C, 42D, 42E----- Spriggs	Very poor.	Poor	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
43A----- Suches	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
44C*, 44D*, 44E*: Sylco-----	Very poor.	Very poor.	Good	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
Sylvatus-----	Very poor.	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
45E*, 45F*: Sylvatus-----	Very poor.	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Rock outcrop-----	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
46B----- Thurmont	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
46C----- Thurmont	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
46D----- Thurmont	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
47B----- Thurmont	Very poor.	Poor	Good	Good	Good	Poor	Very poor.	Poor	Good	Very poor.
47C, 47D----- Thurmont	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
48. Udorthents										
49B----- Unison	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
49C----- Unison	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.

See footnote at end of table.

Table 10.--Wildlife Habitat--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hardwood trees	Conif- erous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
49D----- Unison	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
50B----- Warminster	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
50C----- Warminster	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
50D----- Warminster	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
51A----- Wingina	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
52B----- Wintergreen	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
52C----- Wintergreen	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
52D----- Wintergreen	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
53B----- Wintergreen	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
53C----- Wintergreen	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
53D----- Wintergreen	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
54C----- Wintergreen	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
55A----- Yogaville	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.

\* See description of the map unit for composition and behavior characteristics of the map unit.

Table 11.—Building Site Development

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
1D, 1E----- Arcola	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
2A----- Batteau	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding.	Moderate: wetness, flooding.
3B----- Belvoir	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: frost action.	Moderate: wetness, droughty.
4B----- Buffstat	Moderate: depth to rock, too clayey.	Moderate: shrink-swell.	Moderate: depth to rock, shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Slight.
4C----- Buffstat	Moderate: depth to rock, too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: depth to rock, slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope.
4D----- Buffstat	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
5C----- Bugley	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: depth to rock.
5D, 5E----- Bugley	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.
6E*: Catoctin-----	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: large stones, slope.
Rock outcrop----	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.
7B----- Chatuge	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Moderate: wetness, flooding.	Moderate: wetness.
8A----- Codus	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, frost action.	Moderate: flooding, wetness.
9B----- Colleen	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Moderate: shrink-swell, low strength.	Moderate: small stones.

See footnote at end of table.

Table 11.—Building Site Development—Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
9C----- Colleen	Moderate: too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Moderate: shrink-swell, low strength, slope.	Moderate: small stones, slope.
9D----- Colleen	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
10A----- Colvard	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: droughty, flooding.
11A----- Craigsville	Severe: cutbanks cave, large stones.	Severe: flooding, large stones.	Severe: flooding, large stones.	Severe: flooding, large stones.	Severe: flooding, large stones.	Severe: large stones, flooding.
12B----- Delanco	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, frost action.	Moderate: wetness.
12C----- Delanco	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, slope.	Severe: low strength, frost action.	Moderate: wetness, slope.
13C----- Edneytown	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: slope.
13D, 13E----- Edneytown	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
14C*: Edneytown-----	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: large stones, slope.
Peaks-----	Severe: depth to rock.	Moderate: slope, depth to rock, large stones.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, slope, large stones.	Severe: small stones, large stones.
14D*, 14E*, 14F*: Edneytown-----	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Peaks-----	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: small stones, large stones, slope.
15B----- Elioak	Moderate: too clayey.	Slight-----	Slight-----	Moderate: slope.	Moderate: low strength, frost action.	Moderate: large stones, droughty.
15C----- Elioak	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope, frost action.	Moderate: large stones, droughty, slope.

See footnote at end of table.

Table 11.—Building Site Development—Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
15D----- Elioak	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
16C----- Elioak	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope, frost action.	Moderate: large stones, droughty, slope.
16D----- Elioak	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
17B----- Elsinboro	Moderate: wetness.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: low strength.	Slight.
18C----- Fauquier	Moderate: too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope, large stones.
18D, 18E----- Fauquier	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
19A----- Galtsmill	Moderate: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.
20D----- Glenelg	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
21A----- Hatboro	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding, frost action.	Severe: wetness, flooding.
22B----- Hayesville	Moderate: too clayey.	Slight-----	Slight-----	Moderate: slope.	Moderate: low strength, frost action.	Slight.
22C----- Hayesville	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope, frost action.	Moderate: slope.
22D, 22E----- Hayesville	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
23B----- Hayesville	Moderate: too clayey.	Slight-----	Slight-----	Moderate: slope.	Moderate: low strength, frost action.	Slight.
23C----- Hayesville	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope, frost action.	Moderate: slope.
23D, 23E----- Hayesville	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
24C----- Hayesville	Moderate: too clayey, large stones, slope.	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: slope.	Moderate: low strength, slope, frost action.	Severe: large stones.

See footnote at end of table.

Table 11.—Building Site Development—Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
24D, 24E----- Hayesville	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: large stones, slope.
25C----- Hazel	Severe: depth to rock.	Moderate: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, slope, frost action.	Moderate: small stones, droughty, slope.
25D, 25E, 26D, 26E----- Hazel	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
27B----- Jackland	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: shrink-swell, low strength, frost action.	Moderate: small stones, wetness.
27C----- Jackland	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell, slope.	Severe: shrink-swell, low strength, frost action.	Moderate: small stones, wetness, slope.
28B----- Lew	Moderate: large stones.	Moderate: shrink-swell, large stones.	Moderate: shrink-swell, large stones.	Moderate: shrink-swell, slope, large stones.	Moderate: shrink-swell, frost action.	Moderate: large stones.
29B----- Lew	Severe: large stones.	Severe: large stones.	Severe: large stones.	Severe: large stones.	Severe: large stones.	Severe: small stones, large stones.
30C----- Lew	Severe: large stones.	Severe: large stones.	Severe: large stones.	Severe: slope, large stones.	Severe: large stones.	Severe: small stones, large stones.
30D, 30E----- Lew	Severe: large stones, slope.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: small stones, large stones, slope.
31B----- Littlejoe	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Slight.
31C----- Littlejoe	Moderate: too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope.
32B----- Minnieville	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Moderate: shrink-swell, low strength.	Slight.
32C----- Minnieville	Moderate: too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Moderate: shrink-swell, low strength, slope.	Moderate: slope.
32D, 32E----- Minnieville	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

See footnote at end of table.

Table 11.—Building Site Development—Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
33C*: Myersville-----	Moderate: large stones, slope.	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: slope.	Severe: low strength.	Severe: large stones.
Catoctin-----	Severe: depth to rock.	Moderate: slope, depth to rock, large stones.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, slope, large stones.	Severe: large stones.
33D*, 33E*: Myersville-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: large stones, slope.
Catoctin-----	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: large stones, slope.
34C----- Occoquan	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: slope.
34D, 34E, 35D, 35E----- Occoquan	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
36D*, 36E*, 36F*: Peaks-----	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: small stones, large stones, slope.
Rock outcrop----	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.
37A----- Pineywoods	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.
38*----- Pits	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.
39C----- Saunook	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope, frost action.	Moderate: slope.
39D----- Saunook	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
40C----- Saunook	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope, frost action.	Moderate: small stones, slope.
40D, 40E----- Saunook	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

See footnote at end of table.

Table 11.—Building Site Development—Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
41B----- Sketerville	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell, slope.	Moderate: shrink-swell, low strength, wetness.	Moderate: wetness.
42C----- Spriggs	Moderate: depth to rock, slope.	Moderate: slope.	Moderate: depth to rock, slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: small stones, large stones, slope.
42D, 42E----- Spriggs	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
43A----- Suches	Moderate: wetness, flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.
44C*: Sylco-----	Severe: depth to rock.	Moderate: slope, depth to rock, large stones.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, slope, large stones.	Severe: large stones.
Sylvatus-----	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: small stones, large stones.
44D*, 44E*: Sylco-----	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: large stones, slope.
Sylvatus-----	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: small stones, large stones, slope.
45E*, 45F*: Sylvatus-----	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: small stones, large stones, slope.
Rock outcrop----	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.
46B----- Thurmont	Moderate: wetness.	Slight-----	Moderate: wetness.	Moderate: slope.	Moderate: frost action.	Slight.
46C----- Thurmont	Moderate: wetness, slope.	Moderate: slope.	Moderate: wetness, slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: slope.
46D----- Thurmont	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
47B----- Thurmont	Moderate: wetness.	Slight-----	Moderate: wetness.	Moderate: slope.	Moderate: frost action.	Moderate: large stones.

See footnote at end of table.

Table 11.—Building Site Development—Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
47C----- Thurmont	Moderate: wetness, slope.	Moderate: slope.	Moderate: wetness, slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: large stones, slope.
47D----- Thurmont	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
48. Udorthents						
49B----- Unison	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Moderate: large stones.
49C----- Unison	Moderate: too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: large stones, slope.
49D----- Unison	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
50B----- Warminster	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Slight.
50C----- Warminster	Moderate: too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope.
50D----- Warminster	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
51A----- Wingina	Moderate: wetness, flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.
52B----- Wintergreen	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Moderate: shrink-swell, low strength.	Slight.
52C----- Wintergreen	Moderate: too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Moderate: shrink-swell, low strength, slope.	Moderate: slope.
52D----- Wintergreen	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
53B----- Wintergreen	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Moderate: shrink-swell, low strength.	Slight.
53C----- Wintergreen	Moderate: too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Moderate: shrink-swell, low strength, slope.	Moderate: slope.
53D----- Wintergreen	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

See footnote at end of table.

Table 11.—Building Site Development—Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
54C----- Wintergreen	Moderate: too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Moderate: shrink-swell, low strength, slope.	Moderate: large stones, slope.
55A----- Yogaville	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: wetness.

\* See description of the map unit for composition and behavior characteristics of the map unit.

Table 12.—General Corrective Measures for Limitations Affecting  
Dwellings with or without Basements

(Consult the local building inspector's office for specific requirements)

Limiting factors	Corrective measures
Depth to rock (soft)--	Excavate rock material using machinery
Depth to rock (hard)--	Remove rock by blasting
Flooding-----	Soil is not recommended for the use
Large stones-----	Remove stones
Shrinking and swelling	Maintain soil moisture; strengthen foundations of buildings
Slope-----	Design dwellings so that they are built parallel to the slope
Wetness-----	Provide surface and subsurface drainage systems to remove water from around foundations

Table 13.—General Corrective Measures for Limitations  
Affecting Lawns and Landscaping

(Consult the local office of the Cooperative Extension Service for specific recommendations)

Limiting factors	Corrective measures
Depth to rock-----	Select shallow rooting species for planting; prepare a raised seedbed
Flooding-----	Soil is not recommended for the use
Large stones-----	Excavate and remove stones
Small stones-----	Screen topsoil and remove stones
Droughty-----	Maintain adequate amount of moisture for selected plant species
Slope-----	Design landscaping so that runoff is minimized and maintenance problems are reduced
Wetness-----	Provide surface and subsurface drainage systems to remove excess water

Table 14.—Sanitary Facilities

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "good," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
1D, 1E----- Arcola	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
2A----- Batteau	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
3B----- Belvoir	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
4B----- Buffstat	Moderate: depth to rock, percs slowly.	Moderate: seepage, depth to rock, slope.	Severe: depth to rock, too clayey.	Moderate: depth to rock.	Poor: too clayey, hard to pack, small stones.
4C----- Buffstat	Moderate: depth to rock, percs slowly, slope.	Severe: slope.	Severe: depth to rock, too clayey.	Moderate: depth to rock, slope.	Poor: too clayey, hard to pack, small stones.
4D----- Buffstat	Severe: slope.	Severe: slope.	Severe: depth to rock, slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, small stones.
5C----- Bugley	Severe: depth to rock.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage.	Severe: depth to rock.	Poor: depth to rock, small stones.
5D, 5E----- Bugley	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
6E*: Catoctin-----	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, seepage, slope.	Poor: depth to rock, small stones, slope.
Rock outcrop-----	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock, slope.
7B----- Chatuge	Severe: wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: wetness.	Poor: wetness.

See footnote at end of table.

Table 14.—Sanitary Facilities—Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
8A----- Codorus	Severe: flooding, wetness, poor filter.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, wetness.	Poor: wetness.
9B----- Colleen	Severe: percs slowly.	Moderate: slope.	Moderate: too clayey.	Slight-----	Fair: too clayey, hard to pack.
9C----- Colleen	Severe: percs slowly.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, hard to pack, slope.
9D----- Colleen	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
10A----- Colvard	Severe: flooding.	Severe: seepage, flooding.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage.	Good.
11A----- Craigsville	Severe: flooding, poor filter, large stones.	Severe: seepage, flooding, large stones.	Severe: flooding, seepage, large stones.	Severe: flooding, seepage.	Poor: seepage, large stones.
12B----- Delanco	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
12C----- Delanco	Severe: wetness, percs slowly.	Severe: slope, wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
13C----- Edneytown	Moderate: slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Fair: too sandy, slope.
13D, 13E----- Edneytown	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope.
14C*: Edneytown-----	Moderate: slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Fair: too sandy, slope.
Peaks-----	Severe: depth to rock, poor filter.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Poor: depth to rock, small stones.
14D*, 14E*, 14F*: Edneytown-----	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope.

See footnote at end of table.

Table 14.—Sanitary Facilities—Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
14D*, 14E*, 14F*: Peaks-----	Severe: depth to rock, poor filter, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, seepage, slope.	Poor: depth to rock, small stones, slope.
15B----- Elioak	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight-----	Fair: too clayey, hard to pack.
15C----- Elioak	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, hard to pack, slope.
15D----- Elioak	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
16C----- Elioak	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, hard to pack, slope.
16D----- Elioak	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
17B----- Elsinboro	Moderate: flooding, wetness, percs slowly.	Severe: seepage.	Severe: seepage, wetness.	Severe: seepage.	Poor: small stones.
18C----- Fauquier	Moderate: depth to rock, percs slowly, slope.	Severe: slope.	Severe: depth to rock, too clayey.	Moderate: depth to rock, slope.	Poor: too clayey, hard to pack, small stones.
18D, 18E----- Fauquier	Severe: slope.	Severe: slope.	Severe: depth to rock, slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, small stones.
19A----- Galtsmill	Severe: flooding.	Severe: seepage, flooding.	Severe: flooding, seepage.	Severe: flooding, seepage.	Good.
20D----- Glenelg	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: seepage, large stones, slope.
21A----- Hatboro	Severe: flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, wetness.	Poor: wetness.
22B----- Hayesville	Moderate: percs slowly.	Severe: seepage.	Severe: seepage.	Slight-----	Fair: too clayey, hard to pack.

See footnote at end of table.

Table 14.—Sanitary Facilities—Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
22C----- Hayesville	Moderate: percs slowly, slope.	Severe: seepage, slope.	Severe: seepage.	Moderate: slope.	Fair: too clayey, hard to pack, slope.
22D, 22E----- Hayesville	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: slope.	Poor: slope.
23B----- Hayesville	Moderate: percs slowly.	Severe: seepage.	Severe: seepage.	Slight-----	Fair: too clayey, hard to pack.
23C----- Hayesville	Moderate: percs slowly, slope.	Severe: seepage, slope.	Severe: seepage.	Moderate: slope.	Fair: too clayey, hard to pack, slope.
23D, 23E----- Hayesville	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: slope.	Poor: slope.
24C----- Hayesville	Moderate: percs slowly, slope, large stones.	Severe: seepage, slope.	Severe: seepage.	Moderate: slope.	Fair: too clayey, hard to pack, slope.
24D, 24E----- Hayesville	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: slope.	Poor: slope.
25C----- Hazel	Severe: depth to rock.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Poor: depth to rock, small stones.
25D, 25E, 26D, 26E-- Hazel	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, seepage, slope.	Poor: depth to rock, small stones, slope.
27B----- Jackland	Severe: wetness, percs slowly.	Moderate: seepage, slope.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
27C----- Jackland	Severe: wetness, percs slowly.	Severe: slope.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
28B----- Lew	Moderate: percs slowly, large stones.	Moderate: seepage, slope, large stones.	Severe: large stones.	Slight-----	Poor: small stones.
29B----- Lew	Severe: large stones.	Severe: large stones.	Severe: large stones.	Slight-----	Poor: large stones.

See footnote at end of table.

Table 14.—Sanitary Facilities—Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
30C----- Lew	Severe: large stones.	Severe: slope, large stones.	Severe: large stones.	Moderate: slope.	Poor: large stones.
30D, 30E----- Lew	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope.	Poor: large stones, slope.
31B----- Littlejoe	Moderate: depth to rock, percs slowly.	Moderate: seepage, depth to rock, slope.	Severe: depth to rock, too clayey.	Moderate: depth to rock.	Poor: too clayey, hard to pack.
31C----- Littlejoe	Moderate: depth to rock, percs slowly, slope.	Severe: slope.	Severe: depth to rock, too clayey.	Moderate: depth to rock, slope.	Poor: too clayey, hard to pack.
32B----- Minnieville	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight-----	Fair: too clayey, hard to pack.
32C----- Minnieville	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, hard to pack, slope.
32D, 32E----- Minnieville	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
33C*: Myersville-----	Moderate: depth to rock, percs slowly, slope.	Severe: slope.	Severe: depth to rock.	Moderate: depth to rock, slope.	Fair: depth to rock, too clayey, slope.
Catoctin-----	Severe: depth to rock.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Poor: depth to rock, small stones.
33D*, 33E*: Myersville-----	Severe: slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: slope.
Catoctin-----	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, seepage, slope.	Poor: depth to rock, small stones, slope.
34C----- Occoquan	Moderate: depth to rock, slope.	Severe: seepage, slope.	Severe: depth to rock, seepage.	Severe: seepage.	Fair: depth to rock, too sandy, slope.
34D, 34E, 35D, 35E-- Occoquan	Severe: slope.	Severe: seepage, slope.	Severe: depth to rock, seepage, slope.	Severe: seepage, slope.	Poor: slope.

See footnote at end of table.

Table 14.—Sanitary Facilities—Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
36D*, 36E*, 36F*: Peaks-----	Severe: depth to rock, poor filter, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, seepage, slope.	Poor: depth to rock, small stones, slope.
Rock outcrop-----	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock, slope.
37A----- Pineywoods	Severe: wetness, percs slowly.	Severe: wetness.	Severe: depth to rock, wetness.	Severe: wetness.	Poor: small stones, wetness.
38*----- Pits	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock.
39C----- Saunook	Moderate: percs slowly, slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Poor: small stones.
39D----- Saunook	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: small stones, slope.
40C----- Saunook	Moderate: percs slowly, slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Poor: small stones.
40D, 40E----- Saunook	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: small stones, slope.
41B----- Sketerville	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness.	Moderate: wetness.	Fair: too clayey, hard to pack, small stones.
42C----- Spriggs	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock, small stones.
42D, 42E----- Spriggs	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
43A----- Suches	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Fair: wetness, thin layer.
44C*: Sylco-----	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock, small stones.
Sylvatus-----	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock, small stones.

See footnote at end of table.

Table 14.—Sanitary Facilities—Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
44D*, 44E*: Sylco-----	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
Sylvatus-----	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
45E*, 45F*: Sylvatus-----	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
Rock outcrop-----	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock, slope.
46B----- Thurmont	Moderate: wetness, percs slowly.	Moderate: seepage, slope, wetness.	Severe: wetness.	Moderate: wetness.	Fair: small stones.
46C----- Thurmont	Moderate: wetness, percs slowly, slope.	Severe: slope.	Severe: wetness.	Moderate: slope, wetness.	Fair: small stones, slope.
46D----- Thurmont	Severe: slope.	Severe: slope.	Severe: wetness, slope.	Severe: slope.	Poor: slope.
47B----- Thurmont	Moderate: wetness, percs slowly.	Moderate: slope, wetness.	Severe: wetness.	Moderate: wetness.	Severe: large stones.
47C----- Thurmont	Moderate: wetness, percs slowly, slope.	Severe: slope.	Severe: wetness.	Moderate: wetness, slope.	Severe: large stones.
47D----- Thurmont	Severe: slope.	Severe: slope.	Severe: wetness, slope.	Severe: slope.	Severe: large stones, slope.
48. Udorthents					
49B----- Unison	Moderate: percs slowly.	Severe: seepage.	Severe: seepage, too clayey.	Slight-----	Poor: too clayey, hard to pack, small stones.
49C----- Unison	Moderate: percs slowly, slope.	Severe: seepage, slope.	Severe: seepage, too clayey.	Moderate: slope.	Poor: too clayey, hard to pack, small stones.

See footnote at end of table.

Table 14.—Sanitary Facilities—Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
49D----- Unison	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, small stones.
50B----- Warminster	Moderate: depth to rock, percs slowly.	Moderate: seepage, depth to rock, slope.	Severe: depth to rock, too clayey.	Moderate: depth to rock.	Poor: too clayey, hard to pack.
50C----- Warminster	Moderate: depth to rock, percs slowly, slope.	Severe: slope.	Severe: depth to rock, too clayey.	Moderate: depth to rock, slope.	Poor: too clayey, hard to pack.
50D----- Warminster	Severe: slope.	Severe: slope.	Severe: depth to rock, slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, slope.
51A----- Wingina	Severe: flooding.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Fair: too clayey.
52B----- Wintergreen	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight-----	Poor: small stones.
52C----- Wintergreen	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Poor: small stones.
52D----- Wintergreen	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: small stones, slope.
53B----- Wintergreen	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight-----	Poor: small stones.
53C----- Wintergreen	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Poor: small stones.
53D----- Wintergreen	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: small stones, slope.
54C----- Wintergreen	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey, large stones.	Moderate: slope.	Poor: small stones.
55A----- Yogaville	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.

\* See description of the map unit for composition and behavior characteristics of the map unit.

Table 15.—General Corrective Measures for Limitations Affecting  
Septic Tank Absorption Fields

(Consult the local Health Department for specific requirements)

Limiting factors	Corrective measures
Depth to rock-----	Specially design the absorption field
Flooding-----	Soil is not recommended for the use
Large stones-----	Remove stones
Percs slowly-----	Enlarge the absorption field
Poor filter-----	Enlarge the absorption field
Slope-----	Install absorption fields on the contour
Wetness-----	Provide surface and subsurface drainage systems; specially design the absorption field

Table 16.—Construction Materials

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
1D----- Arcola	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
1E----- Arcola	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
2A----- Batteau	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
3B----- Belvoir	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim.
4B, 4C, 4D----- Buffstat	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones, area reclaim.
5C----- Bugley	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones.
5D----- Bugley	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
5E----- Bugley	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
6E*: Catoctin-----	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Rock outcrop-----	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, slope.
7B----- Chatuge	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, area reclaim.
8A----- Codorus	Fair: wetness, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
9B, 9C----- Colleen	Fair: shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones.

See footnote at end of table.

Table 16.—Construction Materials—Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
9D----- Colleen	Fair: shrink-swell, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones, slope.
10A----- Colvard	Good-----	Probable-----	Probable-----	Poor: area reclaim.
11A----- Craigsville	Poor: large stones.	Improbable: large stones.	Improbable: large stones.	Poor: area reclaim, small stones.
12B, 12C----- Delanco	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones, area reclaim.
13C----- Edneytown	Good-----	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones, slope.
13D----- Edneytown	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
13E----- Edneytown	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
14C*: Edneytown-----	Good-----	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones, slope.
Peaks-----	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
14D*, 14E*, 14F*: Edneytown-----	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Peaks-----	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
15B, 15C----- Elioak	Good-----	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones, area reclaim.
15D----- Elioak	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones, area reclaim.
16C----- Elioak	Good-----	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones, area reclaim.

See footnote at end of table.

Table 16.—Construction Materials—Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
16D----- Elioak	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones, area reclaim.
17B----- Elsinboro	Good-----	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
18C----- Fauquier	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
18D----- Fauquier	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, small stones.
18E----- Fauquier	Poor: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, small stones.
19A----- Galtsmill	Good-----	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
20D----- Glenelg	Fair: slope.	Probable-----	Probable-----	Poor: area reclaim, small stones, slope.
21A----- Hatboro	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
22B, 22C----- Hayesville	Good-----	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
22D----- Hayesville	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
22E----- Hayesville	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
23B, 23C----- Hayesville	Good-----	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
23D----- Hayesville	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
23E----- Hayesville	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
24C----- Hayesville	Fair: large stones.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, large stones.
24D----- Hayesville	Fair: large stones, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, large stones, slope.

See footnote at end of table.

Table 16.—Construction Materials—Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
24E----- Hayesville	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, large stones, slope.
25C----- Hazel	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
25D----- Hazel	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
25E----- Hazel	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
26D----- Hazel	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
26E----- Hazel	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
27B, 27C----- Jackland	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones.
28B----- Lew	Fair: shrink-swell, large stones.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: small stones, area reclaim.
29B, 30C----- Lew	Poor: large stones.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: large stones, area reclaim.
30D----- Lew	Poor: large stones.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: large stones, area reclaim, slope.
30E----- Lew	Poor: large stones, slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: large stones, area reclaim, slope.
31B, 31C----- Littlejoe	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones.
32B, 32C----- Minnieville	Good-----	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
32D----- Minnieville	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
32E----- Minnieville	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.

See footnote at end of table.

Table 16.—Construction Materials—Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
33C*: Myersville-----	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
Catoctin-----	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
33D*, 33E*: Myersville-----	Poor: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
Catoctin-----	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
34C----- Occoquan	Fair: depth to rock, thin layer.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
34D----- Occoquan	Fair: depth to rock, thin layer, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
34E----- Occoquan	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
35D----- Occoquan	Fair: depth to rock, thin layer, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
35E----- Occoquan	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
36D*, 36E*, 36F*: Peaks-----	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Rock outcrop-----	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, slope.
37A----- Pineywoods	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, wetness.
38*----- Pits	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock.
39C----- Saunook	Good-----	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.

See footnote at end of table.

Table 16.—Construction Materials—Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
39D----- Saunook	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
40C----- Saunook	Good-----	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
40D----- Saunook	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
40E----- Saunook	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
41B----- Sketerville	Fair: shrink-swell, low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones, area reclaim.
42C----- Spriggs	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
42D----- Spriggs	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
42E----- Spriggs	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
43A----- Suches	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
44C*: Sylco-----	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Sylvatus-----	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones.
44D*, 44E*: Sylco-----	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Sylvatus-----	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
45E*, 45F*: Sylvatus-----	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.

See footnote at end of table.

Table 16.—Construction Materials—Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
45E*, 45F*: Rock outcrop-----	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, slope.
46B----- Thurmont	Good-----	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
46C----- Thurmont	Good-----	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones, slope.
46D----- Thurmont	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
47B, 47C----- Thurmont	Good-----	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
47D----- Thurmont	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
48. Udorthents				
49B, 49C----- Unison	Fair: shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones, area reclaim.
49D----- Unison	Fair: shrink-swell, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones, area reclaim.
50B, 50C, 50D----- Warminster	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones, area reclaim.
51A----- Wingina	Good-----	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
52B, 52C----- Wintergreen	Fair: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones, area reclaim.
52D----- Wintergreen	Fair: shrink-swell, low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones, area reclaim.

See footnote at end of table.

Table 16.—Construction Materials—Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
53B, 53C----- Wintergreen	Fair: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones, area reclaim.
53D----- Wintergreen	Fair: shrink-swell, low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones, area reclaim.
54C----- Wintergreen	Fair: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones, area reclaim.
55A----- Yogaville	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.

\* See description of the map unit for composition and behavior characteristics of the map unit.

Table 17.—Water Management

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not evaluated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
1D, 1E----- Arcola	Severe: slope.	Severe: thin layer.	Deep to water	Slope, droughty, depth to rock.	Slope, depth to rock.	Slope, droughty, depth to rock.
2A----- Batteau	Moderate: seepage.	Severe: piping, wetness.	Flooding-----	Wetness-----	Wetness-----	Wetness.
3B----- Belvoir	Moderate: seepage, slope.	Severe: piping.	Percs slowly, frost action, slope.	Slope, wetness, droughty.	Erodes easily, wetness, rooting depth.	Wetness, erodes easily, droughty.
4B----- Buffstat	Moderate: seepage, depth to rock, slope.	Moderate: thin layer, hard to pack.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
4C, 4D----- Buffstat	Severe: slope.	Moderate: thin layer, hard to pack.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
5C, 5D, 5E----- Bugley	Severe: depth to rock, slope.	Severe: piping, large stones.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
6E*: Catoclin-----	Severe: seepage, slope.	Severe: large stones.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Rock outcrop-----	Severe: depth to rock, slope.	Slight-----	Deep to water	Slope, depth to rock.	Slope, depth to rock.	Slope, depth to rock.
7B----- Chatuge	Severe: seepage.	Severe: wetness.	Favorable-----	Wetness-----	Wetness-----	Wetness.
8A----- Codus	Severe: seepage.	Severe: wetness.	Flooding, frost action.	Flooding, wetness.	Wetness-----	Flooding, wetness.
9B----- Colleen	Moderate: slope.	Severe: hard to pack.	Deep to water	Slope, percs slowly.	Percs slowly---	Percs slowly.
9C, 9D----- Colleen	Severe: slope.	Severe: hard to pack.	Deep to water	Slope, percs slowly.	Slope, percs slowly.	Slope, percs slowly.
10A----- Colvard	Severe: seepage.	Severe: piping.	Deep to water	Droughty, soil blowing, flooding.	Soil blowing---	Droughty.
11A----- Craigsville	Severe: seepage.	Severe: seepage, large stones.	Deep to water	Large stones, droughty.	Large stones, too sandy.	Large stones, droughty.

See footnote at end of table.

Table 17.—Water Management—Continued

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
12B----- Delanco	Moderate: seepage, slope.	Severe: thin layer, wetness.	Frost action, slope.	Slope, wetness.	Wetness-----	Wetness.
12C----- Delanco	Severe: slope.	Severe: thin layer, wetness.	Frost action, slope.	Slope, wetness.	Slope, wetness.	Wetness, slope.
13C, 13D, 13E----- Edneytown	Severe: seepage, slope.	Severe: seepage, piping.	Deep to water	Slope-----	Slope, too sandy.	Slope.
14C*, 14D*, 14E*, 14F*:----- Edneytown-----	Severe: seepage, slope.	Severe: seepage, piping.	Deep to water	Slope-----	Slope, too sandy.	Slope.
Peaks-----	Severe: seepage, slope.	Severe: seepage, large stones.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
15B----- Elioak	Moderate: seepage, slope.	Severe: hard to pack.	Deep to water	Slope, droughty.	Erodes easily	Erodes easily, droughty.
15C, 15D, 16C, 16D----- Elioak	Severe: slope.	Severe: hard to pack.	Deep to water	Slope, droughty.	Slope, erodes easily.	Slope, erodes easily, droughty.
17B----- Elsinboro	Severe: seepage.	Severe: seepage, piping.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
18C, 18D, 18E----- Fauquier	Severe: slope.	Severe: hard to pack.	Deep to water	Slope-----	Slope-----	Slope.
19A----- Galtsmill	Severe: seepage.	Severe: piping.	Deep to water	Soil blowing---	Soil blowing---	Favorable.
20D----- Glenelg	Severe: slope.	Severe: seepage, piping.	Deep to water	Slope-----	Slope, large stones, erodes easily.	Large stones, slope, erodes easily.
21A----- Hatboro	Severe: seepage.	Severe: piping, wetness.	Flooding, frost action.	Wetness, flooding.	Wetness-----	Wetness.
22B----- Hayesville	Severe: seepage.	Severe: hard to pack.	Deep to water	Slope-----	Favorable-----	Favorable.
22C, 22D, 22E----- Hayesville	Severe: seepage, slope.	Severe: hard to pack.	Deep to water	Slope-----	Slope-----	Slope.
23B----- Hayesville	Severe: seepage.	Severe: hard to pack.	Deep to water	Slope-----	Favorable-----	Favorable.

See footnote at end of table.

Table 17.—Water Management—Continued

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
23C, 23D, 23E----- Hayesville	Severe: seepage, slope.	Severe: hard to pack.	Deep to water	Slope-----	Slope-----	Slope.
24C, 24D, 24E----- Hayesville	Severe: seepage, slope.	Severe: hard to pack.	Deep to water	Slope, large stones.	Slope, large stones.	Large stones, slope.
25C, 25D, 25E----- Hazel	Severe: seepage, slope.	Severe: piping.	Deep to water	Slope, droughty, depth to rock.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
26D, 26E----- Hazel	Severe: seepage, slope.	Severe: piping.	Deep to water	Slope, depth to rock.	Slope, large stones, depth to rock.	Large stones, slope.
27B----- Jackland	Moderate: seepage, slope.	Severe: hard to pack.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Wetness, percs slowly.	Wetness, percs slowly.
27C----- Jackland	Severe: slope.	Severe: hard to pack.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Slope, wetness, percs slowly.	Wetness, slope, percs slowly.
28B----- Lew	Moderate: seepage, slope.	Severe: piping, large stones.	Deep to water	Slope, large stones, erodes easily.	Large stones, erodes easily.	Large stones, erodes easily.
29B----- Lew	Moderate: seepage, slope.	Severe: piping, large stones.	Deep to water	Slope, large stones, droughty.	Large stones---	Large stones, droughty.
30C, 30D, 30E----- Lew	Severe: slope.	Severe: piping, large stones.	Deep to water	Slope, large stones, droughty.	Slope, large stones.	Large stones, slope, droughty.
31B----- Littlejoe	Moderate: seepage, depth to rock, slope.	Severe: hard to pack.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
31C----- Littlejoe	Severe: slope.	Severe: hard to pack.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
32B----- Minnieville	Moderate: seepage, slope.	Moderate: hard to pack.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
32C, 32D, 32E----- Minnieville	Severe: slope.	Moderate: hard to pack.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
33C*, 33D*, 33E*: Myersville-----	Severe: slope.	Moderate: thin layer, piping, large stones.	Deep to water	Slope, large stones.	Slope, large stones.	Large stones, slope.
Catoctin-----	Severe: seepage, slope.	Severe: large stones.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.

See footnote at end of table.

Table 17.—Water Management—Continued

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
34C, 34D, 34E----- Occoquan	Severe: seepage, slope.	Severe: piping.	Deep to water	Slope-----	Slope, erodes easily, too sandy.	Slope, erodes easily.
35D, 35E----- Occoquan	Severe: seepage, slope.	Severe: piping.	Deep to water	Slope, droughty.	Slope, too sandy.	Slope, droughty.
36D*, 36E*, 36F*: Peaks-----	Severe: seepage, slope.	Severe: seepage, large stones.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Rock outcrop-----	Severe: depth to rock, slope.	Slight-----	Deep to water	Slope, depth to rock.	Slope, depth to rock.	Slope, depth to rock.
37A----- Pineywoods	Moderate: depth to rock.	Severe: piping, wetness.	Percs slowly, frost action.	Wetness, percs slowly.	Erodes easily, wetness.	Wetness, erodes easily, percs slowly.
38*----- Pits	Severe: depth to rock.	Slight-----	Deep to water	Depth to rock	Depth to rock	Depth to rock.
39C, 39D----- Saunook	Severe: seepage, slope.	Severe: piping.	Deep to water	Slope-----	Slope-----	Slope.
40C, 40D, 40E----- Saunook	Severe: seepage, slope.	Severe: piping.	Deep to water	Slope-----	Slope, large stones.	Large stones, slope.
41B----- Sketerville	Moderate: slope.	Severe: hard to pack.	Percs slowly, slope.	Slope, wetness.	Erodes easily, wetness, percs slowly.	Erodes easily, percs slowly.
42C, 42D, 42E----- Spriggs	Severe: slope.	Severe: piping.	Deep to water	Slope, depth to rock.	Slope, depth to rock, erodes easily.	Slope, erodes easily, depth to rock.
43A----- Suches	Moderate: seepage.	Moderate: piping.	Flooding-----	Wetness, flooding.	Wetness, soil blowing.	Favorable.
44C*, 44D*, 44E*: Sylco-----	Severe: slope.	Severe: piping.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Sylvatus-----	Severe: depth to rock, slope.	Severe: thin layer.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
45E*, 45F*: Sylvatus-----	Severe: depth to rock, slope.	Severe: thin layer.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Rock outcrop-----	Severe: depth to rock, slope.	Slight-----	Deep to water	Slope, depth to rock.	Slope, depth to rock.	Slope, depth to rock.

See footnote at end of table.

Table 17.—Water Management—Continued

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
46B----- Thurmont	Moderate: seepage, slope.	Moderate: thin layer, piping.	Deep to water	Slope-----	Favorable-----	Favorable.
46C, 46D----- Thurmont	Severe: slope.	Moderate: thin layer, piping.	Deep to water	Slope-----	Slope-----	Slope.
47B----- Thurmont	Moderate: slope.	Moderate: thin layer, piping, large stones.	Deep to water	Slope-----	Large stones---	Large stones.
47C, 47D----- Thurmont	Severe: slope.	Moderate: thin layer, piping, large stones.	Deep to water	Slope-----	Slope, large stones.	Slope, large stones.
48. Udorthents						
49B----- Unison	Severe: seepage.	Moderate: thin layer, hard to pack, large stones.	Deep to water	Slope-----	Large stones---	Large stones.
49C, 49D----- Unison	Severe: seepage, slope.	Moderate: thin layer, hard to pack, large stones.	Deep to water	Slope-----	Slope, large stones.	Large stones, slope.
50B----- Warminster	Moderate: seepage, depth to rock, slope.	Severe: hard to pack.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
50C, 50D----- Warminster	Severe: slope.	Severe: hard to pack.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
51A----- Wingina	Moderate: seepage.	Severe: piping.	Deep to water	Flooding-----	Favorable-----	Favorable.
52B----- Wintergreen	Moderate: seepage, slope.	Moderate: hard to pack.	Deep to water	Slope-----	Favorable-----	Favorable.
52C, 52D----- Wintergreen	Severe: slope.	Moderate: hard to pack.	Deep to water	Slope-----	Slope-----	Slope.
53B----- Wintergreen	Moderate: seepage, slope.	Moderate: hard to pack.	Deep to water	Slope-----	Favorable-----	Favorable.
53C, 53D----- Wintergreen	Severe: slope.	Moderate: hard to pack.	Deep to water	Slope-----	Slope-----	Slope.
54C----- Wintergreen	Severe: slope.	Moderate: piping, hard to pack, large stones.	Deep to water	Slope-----	Slope, large stones.	Large stones, slope.

See footnote at end of table.

Table 17.—Water Management—Continued

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
55A----- Yogaville	Moderate: seepage.	Severe: piping, wetness.	Flooding-----	Wetness, flooding.	Wetness-----	Wetness.

\* See description of the map unit for composition and behavior characteristics of the map unit.

Table 18.—Engineering Index Properties

(The symbol &lt; means less than; &gt; means more than. Absence of an entry indicates that data were not estimated)

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO							
						4	10	40	200		
	In				Pct					Pct	
1D, 1E----- Arcola	0-6	Gravelly silt loam.	SC, CL-ML, CL, SC-SM	A-2, A-4, A-6	0-5	85-95	50-75	45-70	30-65	20-35	4-15
	6-34	Silt loam, gravelly silty clay loam, gravelly silt loam.	CL, SC	A-6	0-5	85-95	50-85	45-80	35-75	25-40	10-25
	34-58	Weathered bedrock	---	---	---	---	---	---	---	---	---
	58	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
2A----- Batteau	0-13	Loam-----	ML, CL-ML, CL	A-4, A-6	0	95-100	75-100	65-100	45-90	17-35	5-17
	13-72	Sandy loam, clay loam, loam.	ML, CL-ML, CL	A-4, A-6, A-7	0	95-100	75-100	65-100	45-95	20-42	5-20
3B----- Belvoir	0-4	Sandy loam-----	SM, SC-SM	A-4	0	90-100	80-100	50-70	25-40	10-25	NP-8
	4-25	Sandy clay loam, clay loam, loam.	SC, CL	A-4, A-6	0	90-100	80-100	75-90	40-80	25-45	7-25
	25-40	Sandy loam, sandy clay loam, loam.	ML, CL, SM, SC	A-2, A-4, A-6	0-5	90-100	80-100	60-90	30-70	20-40	NP-20
	40-63	Loam, sandy clay loam, clay.	SM, SC, CL, ML	A-4, A-6	0-10	90-100	80-100	50-90	40-80	15-50	NP-30
4B, 4C, 4D----- Buffstat	0-4	Silt loam-----	ML, CL-ML, CL	A-4, A-6	0-5	80-100	75-100	55-95	50-85	15-35	NP-15
	4-42	Channery silty clay loam, clay, gravelly silty clay.	CL, CH	A-7	0-5	70-100	50-100	45-95	35-90	35-60	15-30
	42-58	Weathered bedrock	---	---	---	---	---	---	---	---	---
	58	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
5C, 5D, 5E----- Bugley	0-3	Channery silt loam.	GM, ML, CL, GC	A-4	8-25	70-100	65-85	50-80	36-75	18-32	2-15
	3-13	Very channery silt loam, channery silt loam, extremely channery clay loam.	GM, GC, ML, CL	A-1, A-2, A-4, A-6	13-40	40-90	30-90	30-85	20-80	18-38	2-20
	13-18	Weathered bedrock	---	---	---	---	---	---	---	---	---
	18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

Table 18.—Engineering Index Properties—Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
6E*:											
Catoctin-----	0-5	Extremely stony silt loam.	ML, CL, CL-ML	A-4	20-50	80-90	75-85	70-80	60-70	<30	NP-8
	5-28	Channery silt loam, channery silty clay loam, cobbly silt loam.	SM, SC, CL, GM	A-2, A-4, A-6	0-25	50-80	35-75	30-60	25-60	20-34	2-12
	28-36	Extremely channery silt loam, channery silt loam.	SM, SC, GC, GM	A-2, A-4, A-1, A-3	10-40	30-75	10-60	9-55	7-50	<28	NP-8
	36	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop----	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
7B-----	0-9	Loam-----	ML, SM, SC, CL	A-4	0	100	95-100	70-95	40-70	<30	NP-10
Chatuge	9-41	Loam, clay loam, sandy clay loam.	ML, CL, SM, SC	A-4, A-6	0	100	97-100	75-96	43-75	15-40	4-20
	41-62	Gravelly sandy clay loam, sandy loam, very gravelly coarse sand.	SM	A-1	5-15	75-90	40-80	30-50	13-20	---	NP
8A-----	0-3	Silt loam-----	ML, CL, CL-ML	A-4, A-6	0	80-100	70-100	65-100	55-95	22-35	2-12
Codorus	3-50	Silt loam, loam, silty clay loam.	ML, CL, CL-ML	A-4, A-6	0	80-100	75-100	65-100	55-85	22-35	2-12
	50-72	Stratified sand, silt, gravel.	SM, GM, ML	A-1, A-2, A-4	0	25-100	20-100	20-85	15-65	<35	NP-7
9B, 9C, 9D-----	0-9	Gravelly loam----	SM, SC, ML, CL	A-4, A-6	0	90-100	50-100	45-90	30-90	15-25	NP-15
Colleen	9-50	Gravelly clay, gravelly silty clay loam, clay loam.	CL, CH	A-6, A-7	0	90-100	50-100	45-90	40-90	30-65	15-50
	50-72	Sandy loam, gravelly clay loam, silty clay loam.	ML, CL, SC	A-2, A-4, A-6	0	90-100	50-100	30-90	15-90	20-45	5-25
10A-----	0-5	Fine sandy loam	SM, SC, SC-SM	A-2, A-4	0-5	98-100	85-100	60-85	25-49	<30	NP-10
Colvard	5-56	Fine sandy loam, sandy loam, loam.	SM, SC, SC-SM	A-2, A-4	0-5	98-100	85-100	60-85	25-49	<30	NP-10
	56-62	Loamy sand, sand, cobbly sand.	SM, SP-SM, GM, GP-GM	A-2, A-1	0-20	40-95	30-95	25-85	10-35	---	NP

See footnote at end of table.

Table 18.—Engineering Index Properties—Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
11A----- Craigsville	0-6	Very cobbly loam	SM, GM, GC, GM-GC	A-1, A-2, A-4	65-75	65-90	55-85	35-75	20-55	<25	NP-10
	6-21	Gravelly sandy loam, cobbly loam, extremely cobbly sandy loam.	SM, GM, GC, SC	A-1, A-2, A-4	25-60	50-80	30-65	25-60	15-40	<25	NP-10
	21-64	Extremely gravelly loamy sand, very gravelly sandy loam, extremely cobbly loamy sand.	GC, GM, GP-GM, GM-GC	A-1, A-2	35-75	35-55	30-50	20-45	10-25	<25	NP-8
12B, 12C----- Delanco	0-5	Loam-----	ML, CL	A-4, A-6	0	90-100	80-100	70-95	50-75	15-30	NP-15
	5-45	Silty clay loam, clay loam, loam.	ML	A-6, A-7	0	90-100	80-100	70-100	50-95	35-50	10-20
	45-65	Loam, silt loam, gravelly sandy loam.	ML, CL, SM, SC	A-2, A-4, A-6	0	65-100	50-100	30-100	15-90	15-35	NP-15
13C, 13D, 13E----- Edneytown	0-7	Loam-----	SM, ML, CL-ML, SC-SM	A-2, A-4, A-5	0-2	95-100	90-100	70-85	40-70	<25	NP-7
	7-34	Sandy clay loam, clay loam, loam.	SC, CL, CL-ML	A-4, A-6	0	98-100	95-100	80-97	45-75	25-35	5-15
	34-67	Loamy sand, sandy loam, loam.	SM, SC-SM, ML, CL-ML	A-2, A-4	0	98-100	95-100	50-90	15-70	<25	NP-7
14C*, 14D*, 14E*, 14F*: Edneytown-----	0-7	Extremely stony loam.	SM, SC-SM	A-4, A-2-4	0-10	90-100	75-100	50-60	30-40	<25	NP-7
	7-34	Sandy clay loam, clay loam, loam.	SC, CL, CL-ML, SC-SM	A-4, A-6	0-5	98-100	95-100	80-97	45-75	25-35	5-15
	34-67	Loamy sand, sandy loam.	SM, SC-SM	A-2, A-4	0-5	98-100	95-100	50-70	15-40	<25	NP-7
Peaks-----	0-2	Extremely stony loam.	SM, GM, ML, CL-ML	A-2, A-4	20-50	50-90	45-80	40-75	20-55	<30	NP-7
	2-25	Very channery sandy loam, channery fine sandy loam, very gravelly loam.	SM, GM, GM-GC, SC-SM	A-2, A-4	5-40	45-75	30-65	20-55	10-40	<30	NP-7
	25-36	Extremely channery sandy loam, very channery fine sandy loam, extremely channery loam.	SM, GM, GM-GC, SC-SM	A-2, A-4	10-50	45-75	30-65	20-55	10-40	<30	NP-7
	36	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

Table 18.—Engineering Index Properties—Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments 3-10 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
15B, 15C, 15D---- Elioak	0-8	Loam-----	ML, CL, SM, SC	A-4, A-6, A-7, A-2-4	0-10	85-100	80-100	55-100	30-90	30-45	5-20
	8-40	Clay, clay loam, silty clay.	CL, CH, MH, ML	A-6, A-7	0-5	85-100	80-100	75-100	60-95	35-58	11-26
	40-62	Silt loam, loam, gravelly fine sandy loam.	ML, SM, GM	A-4, A-5, A-2, A-1-b	0-5	65-100	50-100	35-100	20-90	35-50	NP-10
16C, 16D----- Elioak	0-6	Clay loam-----	CL	A-6, A-7	0-10	85-100	80-100	75-100	60-90	35-50	12-25
	6-40	Clay, clay loam, silty clay.	CL, CH, MH, ML	A-6, A-7	0-5	85-100	80-100	75-100	60-95	35-58	11-26
	40-62	Silt loam, loam, gravelly fine sandy loam.	ML, SM, GM	A-4, A-5, A-2, A-1-b	0-5	65-100	50-100	35-100	20-90	35-50	NP-10
17B----- Elsinboro	0-11	Loam-----	CL, SC	A-2, A-4	0-5	85-100	80-100	50-100	25-90	21-28	4-9
	11-38	Clay loam, silt loam, loam.	CL	A-6	0-5	85-100	80-100	70-100	50-95	28-40	11-20
	38-72	Sandy loam, sandy clay loam, gravelly sandy loam.	SM, SC, ML, CL	A-2, A-4, A-6, A-7	0-10	65-100	50-100	30-90	15-55	10-45	2-20
18C, 18D, 18E---- Fauquier	0-6	Very stony loam	SC-SM, CL, CL-ML, GC	A-4, A-6	5-25	60-80	55-70	50-60	45-60	22-34	4-14
	6-40	Silty clay loam, clay, gravelly silty clay.	CL, CH, MH, SC	A-6, A-7	0-5	80-100	70-100	50-95	45-95	36-70	16-36
	40-50	Weathered bedrock	---	---	---	---	---	---	---	---	---
19A----- Galtsmill	0-15	Fine sandy loam	SM, SC-SM, ML, CL-ML	A-2, A-4	0	90-100	75-100	60-85	25-55	<25	NP-5
	15-72	Loam, fine sandy loam, silt loam.	SM, SC-SM, ML, CL-ML	A-2, A-4	0	90-100	75-100	65-100	30-80	<25	NP-5
20D----- Glenelg	0-9	Silt loam-----	ML	A-4, A-6	0	85-100	80-100	70-100	50-75	32-40	7-12
	9-27	Channery silt loam, clay loam, loam.	GM, ML, SM	A-4, A-6, A-7	0-10	60-100	50-100	45-100	35-95	34-46	9-15
	27-65	Loam, sandy loam, channery loam.	GM, SM, ML	A-2, A-4	0-50	60-100	50-100	40-95	25-75	<40	NP-6
21A----- Hatboro	0-12	Loam-----	ML, CL	A-4, A-6	0	95-100	90-100	70-100	60-90	22-35	2-12
	12-50	Silt loam, clay loam, sandy clay loam.	ML, CL, CL-ML	A-4, A-6	0	85-100	80-100	70-95	55-85	22-35	2-12
	50-72	Sandy clay loam, fine sandy loam, silt loam.	ML, CL, SC, SM	A-4	0	75-100	70-100	60-90	45-60	22-30	2-10

See footnote at end of table.

Table 18.—Engineering Index Properties—Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	<u>In</u>				<u>Pct</u>					<u>Pct</u>	
22B, 22C, 22D, 22E----- Hayesville	0-6	Loam-----	SM, SC, ML, CL	A-4	0-5	90-100	85-95	70-95	35-60	25-35	NP-10
	6-40	Clay loam, clay	ML, MH, CL, CH	A-6, A-7	0-5	90-100	85-100	70-100	55-80	36-66	11-35
	40-57	Sandy clay loam, clay loam, loam.	SM, ML, MH, CL	A-6, A-7	0-5	90-100	90-100	85-95	45-65	36-55	11-25
	57-62	Fine sandy loam, loam, sandy clay loam.	SM, ML, CL, SC	A-4, A-6	5-15	90-100	90-95	65-90	40-55	25-40	NP-12
23B, 23C, 23D, 23E----- Hayesville	0-6	Clay loam-----	CL, SC, ML	A-4, A-6, A-7	0-5	90-100	85-100	80-95	45-65	30-50	7-18
	6-40	Clay loam, clay	ML, MH, CL, CH	A-6, A-7	0-5	90-100	85-100	70-100	55-80	36-66	11-35
	40-57	Sandy clay loam, clay loam, loam.	SM, ML, MH, CL	A-6, A-7	0-5	90-100	90-100	85-95	45-65	36-55	11-25
	57-62	Fine sandy loam, loam, sandy clay loam.	SM, ML, CL, SC	A-4, A-6	5-15	90-100	90-95	65-90	40-55	25-40	NP-12
24C, 24D, 24E---- Hayesville	0-6	Very stony loam	SM, SC, ML, CL	A-4	25-50	90-100	85-100	60-95	36-75	25-35	NP-10
	6-40	Clay loam, clay	ML, MH, CL, CH	A-6, A-7	5-25	90-100	85-100	75-100	60-95	35-70	11-30
	40-57	Sandy clay loam, clay loam.	SM, ML, MH, CL	A-2, A-6, A-7	0-5	90-100	85-100	70-100	30-80	30-55	11-25
	57-62	Fine sandy loam, loam.	SM, SC, ML, CL	A-4, A-6	5-15	90-100	85-95	60-80	36-65	25-37	NP-12
25C, 25D, 25E---- Hazel	0-5	Channery loam----	SM, GM, ML	A-4	0-5	60-80	50-75	45-70	35-65	20-32	NP-8
	5-19	Channery fine sandy loam, channery sandy loam, channery silt loam.	SM, GM, ML	A-1, A-2, A-4	0-30	65-95	50-95	30-95	15-85	20-32	NP-8
	19-31	Channery sandy loam, channery loam, channery silt loam.	SM, GM, ML	A-1, A-2, A-4	10-30	60-80	45-70	30-70	20-60	20-32	NP-8
	31	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
26D, 26E----- Hazel	0-5	Very stony loam	SM, SC-SM, SC, GM	A-2, A-4	1-5	65-80	50-70	40-55	30-50	15-30	NP-8
	5-19	Channery sandy loam, channery sandy loam, silt loam.	SM, ML, GM	A-2, A-4, A-1	5-30	60-95	50-95	30-95	15-85	20-32	NP-8
	19-31	Channery sandy loam, channery loam, channery silt loam.	SM, GM, ML	A-2, A-4, A-1	0-30	60-80	45-70	30-70	20-60	20-32	NP-8
	31	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

Table 18.—Engineering Index Properties—Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
27B, 27C----- Jackland	0-9	Gravelly silt loam.	CL	A-6	1-5	95-100	55-80	55-75	50-70	25-40	10-20
	9-30	Clay-----	CL, CH	A-7, A-6	0	99-100	80-100	70-100	55-95	35-60	20-45
	30-61	Clay loam, sandy clay loam, sandy loam.	CL, CL-ML, SC, SC-SM	A-4, A-6	1-5	95-100	65-95	45-90	40-85	20-40	5-20
28B----- Lew	0-8	Silt loam-----	ML, CL, CL-ML	A-4	5-10	95-100	85-90	75-85	60-80	<28	NP-8
	8-62	Extremely channery clay loam, very channery silty clay loam.	ML, GM, SM	A-2, A-4, A-6, A-7	15-65	40-90	30-75	28-75	25-70	32-50	8-20
29B----- Lew	0-8	Extremely stony silt loam.	SM, SC, GM, GM-GC	A-2, A-4	50-70	35-85	30-75	28-70	25-60	<28	NP-8
	8-62	Extremely channery clay loam, very channery silty clay loam.	ML, GM, SM	A-2, A-4, A-6, A-7	25-70	40-90	30-75	28-75	25-70	32-50	8-20
30C, 30D, 30E---- Lew	0-8	Extremely bouldery silt loam.	SM, SC, GM, GM-GC	A-2, A-4	50-70	35-85	30-75	28-70	25-60	<28	NP-8
	8-62	Extremely channery clay loam, very channery silty clay loam.	ML, GM, SM	A-2, A-4, A-6, A-7	25-70	40-90	30-75	28-75	25-70	32-50	8-20
31B, 31C----- Littlejoe	0-8	Silt loam-----	ML, CL, CL-ML	A-4, A-6	0-5	85-100	80-100	65-100	60-90	20-34	2-20
	8-41	Silty clay loam, silty clay, clay.	CH, CL	A-7	0-5	75-100	75-95	60-95	55-95	45-80	20-45
	41-65	Weathered bedrock	---	---	---	---	---	---	---	---	---
32B, 32C, 32D, 32E----- Minnieville	0-12	Loam-----	ML, CL-ML, CL	A-4, A-6	0-5	95-100	85-100	75-90	60-80	<30	NP-15
	12-49	Clay loam, silty clay, clay.	CL, CH	A-6, A-7	0-5	95-100	85-100	80-90	65-85	35-60	15-35
	49-72	Clay, silty clay loam.	CL	A-6, A-7	0-5	95-100	65-100	55-85	50-80	30-45	10-20
33C*, 33D*, 33E*: Myersville-----	0-11	Extremely stony silt loam.	ML, CL, CL-ML	A-4	25-50	95-100	90-100	80-95	55-85	15-28	2-10
	11-40	Silty clay loam, clay loam, channery clay loam.	CL	A-6	3-20	75-95	70-95	55-90	50-85	28-38	12-20
	40-47	Silt loam, channery silt loam, very channery silty clay loam.	CL, CL-ML, GM, GC	A-1, A-2, A-3, A-4	3-20	30-85	20-75	12-70	8-65	<28	NP-10
	47-62	Weathered bedrock	---	---	---	---	---	---	---	---	---

See footnote at end of table.



Table 18.—Engineering Index Properties—Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	<u>In</u>				<u>Pct</u>					<u>Pct</u>	
33C*, 33D*, 33E*: Catoctin-----	0-5	Extremely stony silt loam.	ML, CL, CL-ML	A-4	20-50	80-90	75-85	70-80	60-70	<30	NP-8
	5-28	Channery silt loam, channery silty clay loam, cobbly silt loam.	SM, SC, CL, GM	A-2, A-4, A-6	0-25	50-80	35-75	30-60	25-60	20-34	2-12
	28-36	Extremely channery silt loam, channery silt loam.	SM, SC, GC, GM	A-2, A-4, A-1, A-3	10-40	30-75	10-60	9-55	7-50	<28	NP-8
	36	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
34C, 34D, 34E---- Occoquan	0-4	Loam-----	CL-ML, ML, CL	A-4, A-6	1-5	80-100	75-95	65-90	50-70	<35	NP-15
	4-13	Loam, sandy loam, sandy clay loam.	CL, SC	A-6	1-5	80-100	75-95	50-70	40-70	25-40	10-25
	13-41	Loam, sandy loam, loamy sand.	CL-ML, SC-SM, SC, CL	A-2, A-4	2-10	80-95	75-80	50-70	15-65	<25	NP-10
	41-60	Weathered bedrock	---	---	---	---	---	---	---	---	---
35D, 35E----- Occoquan	0-4	Very stony loam	CL-ML, ML, CL, SC-SM	A-4, A-6	4-23	80-95	50-95	45-80	40-65	<35	NP-15
	4-13	Loam, sandy loam, sandy clay loam.	CL, SC	A-6	1-4	80-100	75-95	50-70	40-70	25-40	10-25
	13-41	Loam, sandy loam, loamy sand.	CL-ML, SC-SM, SC, CL	A-2, A-4	2-8	80-95	75-80	50-70	15-65	<25	NP-10
	41-60	Weathered bedrock	---	---	---	---	---	---	---	---	---
36D*: Peaks-----	0-2	Extremely stony loam.	SM, GM, ML, CL-ML	A-2, A-4	20-50	50-90	45-80	40-75	20-55	<30	NP-7
	2-25	Very channery sandy loam, channery fine sandy loam, very gravelly loam.	SM, GM, GM-GC, SC-SM	A-2, A-4	5-40	45-75	30-65	20-55	10-40	<30	NP-7
	25-35	Extremely channery sandy loam, very channery fine sandy loam, extremely channery loam.	SM, GM, GM-GC, SC-SM	A-2, A-4	10-50	45-75	30-65	20-55	10-40	<30	NP-7
	36	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop----	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

Table 18.—Engineering Index Properties—Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments 3-10 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	<u>In</u>				<u>Pct</u>					<u>Pct</u>	
36E*, 36F*: Peaks-----	0-2	Extremely stony loam.	SM, GM, ML, CL-ML	A-2, A-4	20-50	50-90	45-80	40-75	20-55	<30	NP-7
	2-25	Very channery sandy loam, channery fine sandy loam, very gravelly loam.	SM, GM, GM-GC, SC-SM	A-2, A-4	5-40	45-75	30-65	20-55	10-40	<30	NP-7
	25-36	Extremely channery sandy loam, very channery fine sandy loam, extremely channery loam.	SM, GM, GM-GC, SC-SM	A-2, A-4	10-50	45-75	30-65	20-55	10-40	<30	NP-7
	36	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop----	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
37A----- Pineywoods	0-6	Silt loam-----	ML, CL, CL-ML	A-4, A-6	0	90-100	80-100	70-100	50-90	20-30	NP-15
	6-22	Clay, silty clay, gravelly clay loam.	CL, CH	A-6, A-7	0	90-100	50-100	45-95	45-90	30-65	15-50
	22-41	Sandy loam, loam, gravelly silty clay loam.	ML, CL, SC	A-2, A-4, A-6	0-2	90-100	50-100	30-95	15-90	20-45	5-25
	41-62	Weathered bedrock	---	---	---	---	---	---	---	---	---
38*----- Pits	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
39C, 39D----- Saunook	0-9	Loam-----	SM, ML, MH	A-2, A-4, A-5, A-7-5	0-5	90-100	85-100	60-90	25-65	30-59	NP-14
	9-52	Loam, clay loam, sandy clay loam.	SC, CL, ML, SM	A-4, A-6, A-7-5, A-7-6	0-5	90-100	85-100	75-95	35-75	25-55	7-20
	52-61	Very cobbly sandy loam, cobbly fine sandy loam, cobbly sandy loam.	SM, GM	A-4, A-1-b, A-2-4	15-35	55-80	55-80	30-75	20-50	25-40	NP-10
40C, 40D, 40E---- Saunook	0-9	Stony loam-----	SM, GM, MH, ML	A-2, A-4, A-1, A-5	15-30	65-80	60-80	30-75	20-55	30-59	NP-14
	9-52	Loam, clay loam, sandy clay loam.	SC, CL, ML, SM	A-4, A-6, A-7-5, A-7-6	0-5	90-100	85-100	75-95	35-75	25-55	7-20
	52-61	Very cobbly sandy loam, cobbly fine sandy loam, cobbly sandy loam.	SM, GM	A-4, A-1-b, A-2-4	15-35	55-80	55-80	30-75	20-50	25-40	NP-10

See footnote at end of table.

Table 18.—Engineering Index Properties—Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
41B----- Sketerville	0-4	Silt loam-----	ML, CL, CL-ML	A-4, A-6	0	90-100	80-100	70-100	50-90	20-30	NP-15
	4-42	Clay, silty clay, gravelly clay loam.	CL, CH	A-6, A-7	0	90-100	50-100	45-90	40-90	30-65	15-50
	42-70	Clay loam, loam, gravelly silty clay loam.	ML, CL, SC	A-2, A-4, A-6	0-2	90-100	50-100	30-90	15-90	20-45	5-25
	70	Weathered bedrock	---	---	---	---	---	---	---	---	---
42C, 42D, 42E---- Spriggs	0-4	Very stony loam	ML, CL-ML, CL	A-4, A-6	4-23	80-95	50-95	45-80	40-65	15-30	NP-15
	4-14	Silty clay loam, clay loam, gravelly loam.	CL	A-6	0-2	90-100	70-100	70-90	60-85	25-40	10-25
	14-20	Sandy loam, loam, gravelly loam.	ML, CL-ML, SC-SM, CL	A-1, A-2, A-4, A-6	5-10	75-90	50-85	30-75	15-65	15-30	NP-15
	20-41	Weathered bedrock	---	---	---	---	---	---	---	---	---
	41	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
43A----- Suches	0-11	Loam-----	SM, CL-ML	A-4	0	95-100	95-100	70-100	40-70	<30	NP-7
	11-43	Loam, sandy clay loam, clay loam.	CL-ML, CL	A-4, A-6, A-7	0	95-100	95-100	70-100	55-85	25-50	4-22
	43-61	Sandy loam, loam, sandy clay loam.	SM, CL-ML, SC, CL	A-4, A-6, A-7	0	95-100	95-100	70-100	40-70	25-50	4-22
44C*: Sylco-----	0-3	Extremely stony silt loam.	GC, CL-ML, GM-GC, SC	A-4	15-47	70-90	65-85	55-75	45-70	<30	4-10
	3-34	Very channery clay loam, very channery silty clay loam.	GC, GM-GC, SC, SC-SM	A-2, A-4, A-1-b	12-45	35-70	30-65	25-55	20-45	20-30	5-10
	34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Sylvatus-----	0-1	Extremely stony silt loam.	CL-ML, CL, GM-GC, SC	A-2, A-4, A-6	15-45	25-85	15-75	10-70	10-70	25-40	4-15
	1-15	Extremely channery clay loam, very channery silty clay loam.	GM-GC, GC, SC, GP-GC	A-2, A-4, A-6, A-7	5-20	15-65	10-50	10-45	8-40	25-50	4-25
	15-19	Very channery silt loam, extremely channery silty clay loam.	GM-GC, GW-GC, GP-GC	A-1, A-2	5-35	15-35	10-35	10-25	8-15	25-40	4-15
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

Table 18.—Engineering Index Properties—Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
44D*: Sylco-----	0-3	Extremely stony silt loam.	GC, CL-ML, GM-GC, SC	A-4	15-47	70-90	65-85	55-75	45-70	<30	4-10
	3-34	Very channery clay loam, very channery silty clay loam.	GC, GM-GC, SC, SC-SM	A-2, A-4, A-1-b	12-45	35-70	30-65	25-55	20-45	20-30	5-10
	34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Sylvatus-----	0-1	Extremely stony loam.	CL-ML, CL, GM-GC, SC	A-2, A-4, A-6	15-45	25-85	15-75	10-70	10-70	25-40	4-15
	1-15	Extremely channery clay loam, very channery silty clay loam.	GM-GC, GC, SC, GP-GC	A-2, A-4, A-6, A-7	5-20	15-65	10-50	10-45	8-40	25-50	4-25
	15-19	Very channery silt loam, extremely channery silty clay loam.	GM-GC, GW-GC, GP-GC	A-1, A-2	5-35	15-35	10-35	10-25	8-15	25-40	4-15
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
44E*: Sylco-----	0-3	Extremely stony silt loam.	GC, CL-ML, GM-GC, SC	A-4	15-47	70-90	65-85	55-75	45-70	<30	4-10
	3-34	Very channery clay loam, very channery silty clay loam.	GC, GM-GC, SC, SC-SM	A-2, A-4, A-1-b	12-45	35-70	30-65	25-55	20-45	20-30	5-10
	34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Sylvatus-----	0-1	Extremely stony silt loam.	CL-ML, CL, GM-GC, SC	A-2, A-4, A-6	15-45	25-85	15-75	10-70	10-70	25-40	4-15
	1-15	Extremely channery clay loam, very channery silty clay loam.	GM-GC, GC, SC, GP-GC	A-2, A-4, A-6, A-7	5-20	15-65	10-50	10-45	8-40	25-50	4-25
	15-19	Very channery silt loam, extremely channery silty clay loam.	GM-GC, GW-GC, GP-GC	A-1, A-2	5-35	15-35	10-35	10-25	8-15	25-40	4-15
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

Table 18.—Engineering Index Properties—Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	<u>In</u>				<u>Pct</u>					<u>Pct</u>	
45E*, 45F*: Sylvatus-----	0-1	Extremely stony silt loam.	CL-ML, CL, GM-GC, SC	A-2, A-4, A-6	15-45	25-85	15-75	10-70	10-70	25-40	4-15
	1-15	Extremely channery clay loam, very channery silty clay loam.	GM-GC, GC, SC, GP-GC	A-2, A-4, A-6, A-7	5-20	15-65	10-50	10-45	8-40	25-50	4-25
	15-19	Very channery silt loam, extremely channery silty clay loam.	GM-GC, GW-GC, GP-GC	A-1, A-2	5-35	15-35	10-35	10-25	8-15	25-40	4-15
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop----	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
46B, 46C, 46D---- Thurmont	0-5	Loam-----	SM, ML, CL, SC-SM	A-2, A-4	0-3	80-100	75-100	55-70	25-65	<30	NP-10
	5-24	Clay loam, loam, gravelly sandy clay loam.	SC, CL	A-2, A-6, A-7	0-5	80-100	70-90	65-80	30-60	30-45	12-20
	24-40	Sandy loam, sandy clay loam, gravelly sandy clay loam.	SC	A-2, A-6, A-7	0-5	75-90	70-90	45-75	30-45	30-45	12-25
	40-62	Very cobbly loam, gravelly sandy clay loam.	SM, SC-SM	A-1, A-2	0-30	70-85	50-75	30-50	15-35	<20	NP-7
47B, 47C, 47D---- Thurmont	0-5	Very stony loam	SM, ML, CL, SC-SM	A-1, A-2, A-4	5-20	75-95	75-80	40-70	20-55	<30	NP-10
	5-24	Clay loam, loam, gravelly sandy clay loam.	SC, CL	A-2, A-6, A-7, A-4	2-20	75-90	55-75	45-70	20-55	25-45	7-25
	24-40	Sandy loam, sandy clay loam, gravelly sandy clay loam.	SC	A-2, A-6, A-4	2-20	75-90	55-75	35-60	20-40	25-40	7-20
	40-62	Very cobbly loam, gravelly sandy clay loam.	SM, SC-SM	A-1, A-2	15-40	70-85	45-75	30-50	15-35	<20	NP-7
48. Udorthents											
49B, 49C, 49D---- Unison	0-3	Loam-----	CL, ML, CL-ML	A-4, A-6	0-25	75-100	75-100	60-95	50-90	20-38	2-15
	3-44	Clay loam, clay, gravelly silty clay loam.	CL, CH	A-6, A-7	0-25	75-100	65-100	60-100	55-95	35-65	15-35
	44-62	Cobbly clay loam, silty clay, very gravelly loam.	CL-ML, CL, ML, GM-GC	A-1, A-2, A-6, A-7	10-45	30-90	25-85	20-85	15-80	20-50	5-20

See footnote at end of table.

Table 18.—Engineering Index Properties—Continued

Soil name and map symbol ticity index	Depth	USDA texture	Classification		Frag- ments  inches	Percentage passing sieve number--				Liquid limit
			Unified	AASHTO		4	10	40	200	
	In				Pct					Pct
50B, 50C, 50D--- 10-25	0-8	Clay loam-----	CL	A-6, A-7	0	90-100	75-100	70-100	65-95	30-45
Warminster 25-45	8-38	Silty clay, clay,	CL, CH	A-7	0	95-100	75-100	60-100	55-95	45-70
		silty clay loam.								
25-45	38-45	Silty clay, clay,	CL, CH, SC	A-7	0	95-100	50-95	45-90	40-85	45-70
		gravelly silty clay loam.								
10-25	45-55	Gravelly silty	SC, GC, CL	A-2, A-6	0-5	60-95	25-70	25-65	20-60	30-45
		clay loam, very gravelly silt loam, clay loam.								
--	55	Weathered bedrock	---	---	---	---	---	---	---	-
51A----- 5-15	0-9	Loam-----	CL, ML,	A-4, A-6	0	85-100	75-100	65-100	45-90	15-30
Wingina			CL-ML							
NP-20	9-72	Fine sandy loam,	CL, ML	A-2, A-4,	0	85-100	75-100	45-95	25-90	20-35
		loam, loamy sand.		A-6						
52B, 52C, 52D--- NP-10	0-7	Loam-----	CL, SM,	A-4	0-5	85-100	75-100	65-95	45-75	<30
Wintergreen			ML, SC							
15-35	7-62	Clay loam,	CH, CL, SC	A-7, A-2	0-15	80-100	30-100	25-95	20-90	42-66
		clay, very cobbly sandy clay.								
53B, 53C, 53D--- 15-26	0-7	Clay loam-----	CL	A-6, A-7	0-5	80-100	75-100	65-95	50-85	35-50
Wintergreen			CH, CL, SC	A-7, A-2	0-15	80-100	30-100	25-95	20-90	42-66
15-35		very cobbly sandy clay.								
54C----- NP-10	0-7	Very stony loam	CL, SM,	A-2, A-4	2-20	85-100	75-95	50-85	25-65	<30
Wintergreen			SC, ML							
15-35	7-62	Clay loam, clay,	CH, CL,	A-7, A-2	0-25	60-95	50-90	40-90	30-80	42-66
		very cobbly clay.	SC, GM							
55A----- 5-15	0-20	Loam-----	CL, ML,	A-4, A-6	0	85-100	75-100	65-100	45-90	15-30
Yogaville			CL-ML							
NP-20	20-72	Silt loam, loam,	CL, ML	A-2, A-4,	0	85-100	75-100	45-95	25-90	15-35
		clay loam.		A-6						

\* See description of the map unit for composition and behavior characteristics of the map unit.

Table 19.--Physical and Chemical Properties of the Soils

(The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Organic matter" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated)

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
								K	T		Pct
	In	Pct	g/cc	In/hr	In/in	pH					
1D, 1E----- Arcola	0-6	15-27	1.20-1.50	0.6-2.0	0.10-0.14	4.5-5.5	Low-----	0.24	3	6	.5-2
	6-34	18-35	1.30-1.50	0.6-2.0	0.08-0.18	4.5-5.5	Low-----	0.24			
	34-58	---	---	0.00-0.2	---	---	-----	---			
	58	---	---	---	---	---	-----	---			
2A----- Batteau	0-13	7-27	1.20-1.50	0.6-2.0	0.14-0.22	5.6-7.8	Low-----	0.32	5	6	1-4
	13-72	7-35	1.20-1.50	0.6-2.0	0.10-0.19	5.6-7.8	Low-----	0.28			
3B----- Belvoir	0-4	7-18	1.30-1.60	0.6-6.0	0.10-0.14	4.5-5.5	Low-----	0.24	3	3	.5-2
	4-25	20-35	1.35-1.65	0.6-2.0	0.13-0.18	4.5-5.5	Moderate----	0.37			
	25-40	15-30	1.70-1.90	0.06-0.2	0.07-0.11	4.5-5.5	Low-----	0.28			
	40-63	10-45	1.25-1.55	0.06-2.0	0.10-0.15	4.5-5.5	Moderate----	0.28			
4B, 4C, 4D----- Buffstat	0-4	10-27	1.25-1.55	0.6-2.0	0.14-0.20	4.5-6.5	Low-----	0.37	3-2	8	1-2
	4-42	35-50	1.30-1.60	0.6-2.0	0.12-0.19	4.5-5.5	Moderate----	0.28			
	42-58	---	---	0.00-0.06	---	---	-----	---			
	58	---	---	0.00-0.01	---	---	-----	---			
5C, 5D, 5E----- Bugley	0-3	7-27	1.25-1.55	2.0-6.0	0.10-0.16	3.6-5.5	Low-----	0.20	1	8	.5-2
	3-13	10-35	1.35-1.65	2.0-6.0	0.07-0.14	3.6-5.5	Low-----	0.28			
	13-18	---	---	0.0-0.06	---	---	-----	---			
	18	---	---	0.0-0.01	---	---	-----	---			
6E*: Catoclin-----	0-5	5-20	1.20-1.50	2.0-6.0	0.08-0.14	5.1-6.5	Low-----	0.20	2	8	.5-2
	5-28	10-35	1.20-1.50	2.0-6.0	0.08-0.16	5.1-6.5	Low-----	0.17			
	28-36	10-25	1.20-1.50	2.0-6.0	0.04-0.15	5.6-7.3	Low-----	0.17			
	36	---	---	0.00-0.06	---	---	-----	---			
Rock outcrop----	0-60	---	---	---	---	---	-----	---	---	8	---
7B----- Chatuge	0-9	10-25	1.40-1.70	0.6-2.0	0.12-0.20	4.5-6.0	Low-----	0.32	5	5	1-2
	9-41	20-35	1.40-1.65	0.6-2.0	0.15-0.20	4.5-6.0	Low-----	0.32			
	41-62	2-10	1.55-1.75	6.0-20	0.03-0.08	4.5-6.0	Low-----	0.28			
8A----- Codorus	0-3	15-25	1.20-1.40	0.6-2.0	0.14-0.20	4.5-6.0	Low-----	0.37	5	5	2-4
	3-50	18-35	1.20-1.50	0.6-2.0	0.14-0.18	5.1-6.5	Low-----	0.37			
	50-72	5-12	1.20-1.50	2.0-20	0.04-0.08	5.1-6.5	Low-----	0.24			
9B, 9C, 9D----- Colleen	0-9	10-27	1.35-1.45	0.6-2.0	0.12-0.18	4.5-6.5	Low-----	0.24	5	4	.5-2
	9-50	35-60	1.45-1.55	0.06-0.2	0.10-0.15	3.6-5.5	Moderate----	0.32			
	50-72	10-35	1.45-1.55	0.2-0.6	0.10-0.15	4.5-6.0	Moderate----	0.28			
10A----- Colvard	0-5	8-18	1.45-1.65	2.0-6.0	0.09-0.12	5.1-7.8	Low-----	0.15	5	3	1-2
	5-56	8-18	1.45-1.65	2.0-6.0	0.09-0.12	5.1-7.8	Low-----	0.10			
	56-62	1-12	1.60-1.75	6.0-20	0.06-0.10	5.1-7.8	Low-----	0.10			
11A----- Craigsville	0-6	5-15	1.20-1.40	2.0-20	0.06-0.12	4.5-5.5	Low-----	0.10	5	8	1-3
	6-21	5-15	1.30-1.60	2.0-20	0.06-0.15	4.5-5.5	Low-----	0.17			
	21-64	5-10	1.35-1.55	>6.0	0.04-0.09	4.5-5.5	Low-----	0.17			
12B, 12C----- Delanco	0-5	5-20	1.10-1.30	0.6-2.0	0.15-0.19	3.6-5.5	Low-----	0.24	5	5	2-4
	5-45	18-30	1.40-1.60	0.2-0.6	0.18-0.22	3.6-5.5	Moderate----	0.32			
	45-65	5-25	1.50-1.70	0.6-2.0	0.10-0.22	3.6-5.5	Low-----	0.28			

See footnote at end of table.

Table 19.--Physical and Chemical Properties of the Soils--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction pH	Shrink-swell potential	Erosion factors		Wind erodi- bility group	Organic matter
								K	T		
	In	Pct	g/cc	In/hr	In/in	pH					Pct
13C, 13D, 13E--- Edneytown	0-7	5-15	1.40-1.60	2.0-6.0	0.11-0.17	4.5-6.0	Low-----	0.20	5	---	1-3
	7-34	20-35	1.30-1.40	0.6-2.0	0.12-0.18	4.5-5.5	Low-----	0.24			
	34-67	4-15	1.30-1.50	2.0-6.0	0.06-0.12	4.5-5.5	Low-----	0.17			
14C*, 14D*, 14E*, 14F*: Edneytown-----	0-7	5-15	1.40-1.60	2.0-6.0	0.08-0.14	4.5-6.0	Low-----	0.10	5	8	1-3
	7-34	20-35	1.30-1.40	0.6-2.0	0.12-0.18	4.5-5.5	Low-----	0.24			
	34-67	4-15	1.30-1.50	2.0-6.0	0.06-0.12	4.5-5.5	Low-----	0.17			
Peaks-----	0-2	4-16	1.20-1.40	6.0-20	0.08-0.12	4.5-6.0	Low-----	0.15	2	8	---
	2-25	5-18	1.20-1.40	6.0-20	0.06-0.10	4.5-6.0	Low-----	0.10			
	25-36	5-18	1.20-1.40	6.0-20	0.06-0.10	4.5-6.0	Low-----	0.05			
	36	---	---	0.0-0.01	---	---	-----	---			
15B, 15C, 15D--- Elioak	0-8	15-27	1.25-1.40	0.6-2.0	0.12-0.24	4.5-6.0	Low-----	0.32	5	5	1-3
	8-40	30-60	1.30-1.60	0.2-2.0	0.08-0.12	4.5-5.5	Low-----	0.37			
	40-62	15-27	1.25-1.40	0.6-2.0	0.08-0.12	4.5-6.0	Low-----	0.49			
16C, 16D----- Elioak	0-6	28-40	1.30-1.50	0.2-2.0	0.08-0.12	4.5-5.5	Moderate----	0.28	5	6	1-3
	6-40	30-60	1.30-1.60	0.2-2.0	0.08-0.12	4.5-5.5	Low-----	0.37			
	40-62	15-27	1.25-1.40	0.6-2.0	0.08-0.12	4.5-6.0	Low-----	0.49			
17B----- Elsinboro	0-11	8-18	1.25-1.40	0.6-2.0	0.10-0.18	4.5-5.5	Low-----	0.37	5	5	1-3
	11-38	18-34	1.30-1.50	0.6-2.0	0.12-0.16	4.5-5.5	Low-----	0.28			
	38-72	8-34	1.35-1.55	0.6-6.0	0.06-0.14	4.5-5.5	Low-----	0.17			
18C, 18D, 18E--- Fauquier	0-6	10-25	1.25-1.55	0.6-6.0	0.15-0.21	5.1-6.0	Low-----	0.28	4	8	1-3
	6-40	35-60	1.35-1.65	0.6-2.0	0.12-0.18	4.5-6.0	Moderate----	0.28			
	40-50	---	---	0.00-0.06	---	---	-----	---			
19A----- Galtsmill	0-15	5-18	1.20-1.50	2.0-6.0	0.12-0.20	5.6-7.3	Low-----	0.17	5	3	1-5
	15-72	5-18	1.20-1.50	2.0-6.0	0.12-0.20	5.6-7.3	Low-----	0.28			
20D----- Glenelg	0-9	15-25	1.10-1.40	0.6-2.0	0.14-0.24	4.5-5.5	Low-----	0.32	5	6	1-3
	9-27	20-32	1.20-1.60	0.6-2.0	0.14-0.20	4.5-6.5	Low-----	0.43			
	27-65	5-20	1.20-1.40	0.6-2.0	0.10-0.20	4.5-6.5	Low-----	0.49			
21A----- Hatboro	0-12	10-20	1.20-1.40	0.6-2.0	0.16-0.22	4.5-7.3	Low-----	0.37	5	5	2-4
	12-50	15-35	1.20-1.40	0.6-2.0	0.16-0.20	4.5-7.3	Low-----	0.20			
	50-72	10-35	1.20-1.50	0.6-2.0	0.10-0.14	5.6-6.5	Low-----	0.20			
22B, 22C, 22D, 22E----- Hayesville	0-6	10-25	1.35-1.60	2.0-6.0	0.12-0.20	3.6-6.5	Low-----	0.20	4	5	1-3
	6-40	30-50	1.20-1.35	0.6-2.0	0.15-0.20	3.6-6.0	Low-----	0.24			
	40-57	20-40	1.30-1.40	0.6-2.0	0.12-0.20	3.6-6.0	Low-----	0.20			
	57-62	5-25	1.45-1.65	2.0-6.0	0.11-0.15	3.6-6.0	Low-----	0.17			
23B, 23C, 23D, 23E----- Hayesville	0-6	27-40	1.30-1.50	0.6-2.0	0.12-0.20	3.6-6.5	Low-----	0.24	3	5	1-3
	6-40	30-50	1.20-1.35	0.6-2.0	0.15-0.20	3.6-6.0	Low-----	0.24			
	40-57	20-40	1.30-1.40	0.6-2.0	0.12-0.20	3.6-6.0	Low-----	0.20			
	57-62	5-25	1.45-1.65	2.0-6.0	0.11-0.15	3.6-6.0	Low-----	0.17			
24C, 24D, 24E--- Hayesville	0-6	12-26	1.35-1.60	2.0-6.0	0.08-0.14	3.6-5.5	Low-----	0.15	4	8	1-3
	6-40	35-65	1.30-1.60	0.6-2.0	0.15-0.20	3.6-6.0	Low-----	0.28			
	40-57	25-40	1.25-1.55	0.6-2.0	0.12-0.20	3.6-6.0	Low-----	0.28			
	57-62	5-20	1.20-1.50	2.0-6.0	0.1-0.15	3.6-6.0	Low-----	0.24			

See footnote at end of table.

Table 19.--Physical and Chemical Properties of the Soils--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Wind erodi- bility group	Organic matter
								K	T		
	In	Pct	g/cc	In/hr	In/in	pH					Pct
25C, 25D, 25E---- Hazel	0-5	5-20	1.20-1.50	2.0-6.0	0.12-0.16	4.5-5.5	Low-----	0.24	2	5	.5-2
	5-19	10-18	1.20-1.50	2.0-6.0	0.08-0.18	4.5-5.5	Low-----	0.24			
	19-31	10-18	1.30-1.55	2.0-6.0	0.08-0.14	4.5-5.5	Low-----	0.24			
	31	---	---	---	---	---	-----	---			
26D, 26E----- Hazel	0-5	5-18	1.20-1.50	2.0-6.0	0.11-0.16	4.5-5.5	Low-----	0.24	2	5	.5-2
	5-19	10-18	1.20-1.50	2.0-6.0	0.10-0.15	4.5-5.5	Low-----	0.24			
	19-31	10-18	1.20-1.50	2.0-6.0	0.10-0.14	4.5-5.5	Low-----	0.24			
	31	---	---	---	---	---	-----	---			
27B, 27C----- Jackland	0-9	15-27	1.00-1.30	0.6-2.0	0.16-0.22	4.5-6.0	Low-----	0.24	5	4	.5-2
	9-30	40-60	1.20-1.50	<0.06	0.08-0.12	4.5-7.8	Very high----	0.10			
	30-61	10-40	1.30-1.60	0.6-2.0	0.10-0.14	4.5-7.8	Low-----	0.15			
28B----- Lew	0-8	10-25	1.00-1.20	0.6-6.0	0.17-0.20	4.5-6.0	Low-----	0.37	3	6	1-3
	8-62	28-35	1.20-1.50	0.6-2.0	0.11-0.16	4.5-6.0	Moderate-----	0.15			
29B, 30C, 30D, 30E----- Lew	0-8	10-25	1.00-1.20	0.6-6.0	0.08-0.12	4.5-6.0	Low-----	0.10	5	8	.5-2
	8-62	28-35	1.20-1.50	0.6-2.0	0.08-0.16	4.5-6.0	Moderate-----	0.15			
31B, 31C----- Littlejoe	0-8	12-27	1.10-1.40	0.6-2.0	0.16-0.20	4.5-5.5	Low-----	0.37	4-3	8	.5-2
	8-41	35-60	1.40-1.60	0.2-2.0	0.10-0.19	4.5-5.5	Moderate-----	0.28			
	41-65	---	---	0.0-0.06	---	---	-----	---			
32B, 32C, 32D, 32E----- Minnieville	0-12	10-27	1.25-1.35	0.6-2.0	0.18-0.22	5.1-6.0	Low-----	0.37	5	6	1-2
	12-49	35-70	1.25-1.45	0.6-2.0	0.10-0.14	5.1-6.0	Moderate-----	0.24			
	49-72	30-40	1.25-1.45	0.6-2.0	0.10-0.12	5.1-6.0	Moderate-----	0.24			
33C*, 33D*, 33E*: Myersville-----	0-11	5-20	1.20-1.50	2.0-6.0	0.11-0.16	4.5-6.0	Low-----	0.28	4	8	.5-2
	11-40	18-35	1.20-1.50	0.6-2.0	0.14-0.18	4.5-6.0	Low-----	0.32			
	40-47	10-32	1.20-1.50	0.6-2.0	0.08-0.16	4.5-6.0	Low-----	0.32			
	47-62	---	---	---	---	---	-----	---			
Catoctin-----	0-5	5-20	1.20-1.50	2.0-6.0	0.08-0.14	5.1-6.5	Low-----	0.20	2	8	.5-2
	5-28	10-35	1.20-1.50	2.0-6.0	0.08-0.16	5.1-6.5	Low-----	0.17			
	28-36	10-25	1.20-1.50	2.0-6.0	0.04-0.15	5.6-7.3	Low-----	0.17			
	36	---	---	0.00-0.06	---	---	-----	---			
34C, 34D, 34E---- Occoquan	0-4	7-27	1.10-1.40	0.6-2.0	0.18-0.22	3.6-5.5	Low-----	0.37	4	5	1-3
	4-13	18-35	1.30-1.60	0.6-6.0	0.10-0.14	3.6-5.5	Low-----	0.32			
	13-41	5-27	1.20-1.50	2.0-6.0	0.07-0.10	3.6-5.5	Low-----	0.24			
	41-60	---	---	0.00-0.06	---	---	-----	---			
35D, 35E----- Occoquan	0-4	7-27	1.10-1.40	0.6-2.0	0.12-0.16	3.6-5.5	Low-----	0.20	4	5	.5-2
	4-13	18-35	1.30-1.60	0.6-6.0	0.10-0.14	3.6-5.5	Low-----	0.32			
	13-41	5-27	1.20-1.50	2.0-6.0	0.07-0.10	3.6-5.5	Low-----	0.24			
	41-60	---	---	0.00-0.06	---	---	-----	---			
36D*: Peaks-----	0-2	4-16	1.20-1.40	6.0-20	0.08-0.12	4.5-6.0	Low-----	0.15	2	8	---
	2-25	5-18	1.20-1.40	6.0-20	0.06-0.10	4.5-6.0	Low-----	0.10			
	25-35	5-18	1.20-1.40	6.0-20	0.06-0.10	4.5-6.0	Low-----	0.05			
	36	---	---	0.0-0.01	---	---	-----	---			
Rock outcrop----	0-60	---	---	---	---	---	-----	---	---	8	---

See footnote at end of table.

Table 19.—Physical and Chemical Properties of the Soils—Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction pH	Shrink-swell potential	Erosion factors		Wind erodi- bility group	Organic matter
								K	T		
	In	Pct	g/cc	In/hr	In/in	pH					Pct
36E*, 36F*:											
Peaks-----	0-2	4-16	1.20-1.40	6.0-20	0.08-0.12	4.5-6.0	Low-----	0.15	2	8	---
	2-25	5-18	1.20-1.40	6.0-20	0.06-0.10	4.5-6.0	Low-----	0.10			
	25-36	5-18	1.20-1.40	6.0-20	0.06-0.10	4.5-6.0	Low-----	0.05			
	36	---	---	0.0-0.01	---	---	-----	---			
Rock outcrop----	0-60	---	---	---	---	---	-----	---	---	8	---
37A-----	0-6	10-27	1.35-1.45	0.6-2.0	0.15-0.22	3.6-6.5	Low-----	0.37	4	5	2-4
Pineywoods	6-22	35-60	1.45-1.55	0.06-0.2	0.10-0.15	4.5-5.5	Moderate----	0.32			
	22-41	10-35	1.45-1.55	0.2-0.6	0.10-0.15	5.1-6.5	Moderate----	0.28			
	41-62	---	---	0.00-0.06	---	---	-----	---			
38*-----	0-60	---	---	---	---	---	-----	---	---	8	---
Pits											
39C, 39D-----	0-9	7-20	1.35-1.60	2.0-6.0	0.14-0.20	3.6-6.0	Low-----	0.24	5	5	3-5
Saunook	9-52	18-35	1.30-1.50	0.6-2.0	0.12-0.20	4.5-6.5	Low-----	0.24			
	52-61	7-20	1.35-1.60	2.0-6.0	0.07-0.12	4.5-6.5	Low-----	0.15			
40C, 40D, 40E----	0-9	7-20	1.35-1.60	2.0-6.0	0.10-0.15	3.6-6.0	Low-----	0.15	5	8	3-5
Saunook	9-52	18-35	1.30-1.50	0.6-2.0	0.12-0.20	4.5-6.5	Low-----	0.24			
	52-61	7-20	1.35-1.60	2.0-6.0	0.07-0.12	4.5-6.5	Low-----	0.15			
41B-----	0-4	10-27	1.35-1.45	0.6-2.0	0.15-0.22	3.6-6.5	Low-----	0.37	5	5	1-3
Sketerville	4-42	35-60	1.45-1.55	0.06-0.2	0.10-0.15	3.6-5.5	Moderate----	0.32			
	42-70	10-35	1.45-1.55	0.2-0.6	0.10-0.15	4.5-6.0	Moderate----	0.28			
	70	---	---	0.00-0.06	---	---	-----	---			
42C, 42D, 42E----	0-4	10-27	1.30-1.40	0.6-2.0	0.18-0.24	4.5-6.0	Low-----	0.20	3	8	.5-2
Spriggs	4-14	20-35	1.33-1.40	0.6-2.0	0.12-0.20	4.5-6.0	Moderate----	0.37			
	14-20	15-27	1.40-1.50	0.6-2.0	0.08-0.18	4.5-6.0	Low-----	0.24			
	20-41	---	---	0.00-0.06	---	---	-----	---			
	41	---	---	0.00-0.01	---	---	-----	---			
43A-----	0-11	10-25	1.30-1.50	0.6-2.0	0.11-0.18	5.1-6.0	Low-----	0.24	5	3	2-4
Suches	11-43	18-38	1.45-1.65	0.6-2.0	0.12-0.20	5.1-6.0	Low-----	0.28			
	43-61	8-35	1.55-1.70	0.6-2.0	0.11-0.20	4.5-6.0	Low-----	0.28			
44C*, 44D*, 44E*:											
Sylco-----	0-3	15-25	1.00-1.20	0.6-2.0	0.10-0.15	3.6-5.5	Low-----	0.10	2	---	.5-2
	3-34	15-35	1.20-1.50	0.6-2.0	0.05-0.10	3.6-5.5	Low-----	0.15			
	34	---	---	0.00-0.01	---	---	-----	---			
Sylvatus-----	0-1	10-27	1.20-1.40	0.6-2.0	0.12-0.18	3.6-5.0	Low-----	0.24	1	8	.5-2
	1-15	10-35	1.20-1.60	0.6-2.0	0.10-0.14	3.6-5.0	Low-----	0.10			
	15-19	10-30	1.20-1.40	0.6-2.0	0.04-0.10	3.6-5.0	Low-----	0.10			
	19	---	---	---	---	---	-----	---			
45E*, 45F*:											
Sylvatus-----	0-1	10-27	1.20-1.40	0.6-2.0	0.12-0.18	3.6-5.0	Low-----	0.24	1	8	.5-2
	1-15	10-35	1.20-1.60	0.6-2.0	0.10-0.14	3.6-5.0	Low-----	0.10			
	15-19	10-30	1.20-1.40	0.6-2.0	0.04-0.10	3.6-5.0	Low-----	0.10			
	19	---	---	---	---	---	-----	---			
Rock outcrop----	0-60	---	---	---	---	---	-----	---	---	8	---

See footnote at end of table.

Table 19.—Physical and Chemical Properties of the Soils—Continued

Soil name and map symbol	Depth/Clay		Moist bulk density	Permeability In/hr	Available water capacity	Soil reaction	Shrink-swell potential		Erosion factors		Wind erodi- bility group	Organic matter
	In	Pct					In/in	pH	K	T		
46B, 46C, 46D----	0-5	10-25	1.20-1.40	2.0-6.0	0.10-0.15	4.5-5.5	Low-----	0.32	5		3	.5-2
Thurmont	5-24	18-35	1.30-1.50	0.6-2.0	0.13-0.19	4.5-5.5	Low-----	0.20				
	24-40	18-30	1.30-1.50	0.6-2.0	0.07-0.12	4.5-5.5	Low-----	0.20				
	40-62	10-20	1.20-1.40	0.6-2.0	0.04-0.08	4.5-5.5	Low-----	0.20				
47B, 47C, 47D----	0-5	10-25	1.20-1.40	2.0-6.0	0.10-0.15	4.5-5.5	Low-----	0.24	5		8	.5-2
Thurmont	5-24	18-35	1.30-1.50	0.6-2.0	0.13-0.18	4.5-5.5	Low-----	0.20				
	24-40	18-30	1.30-1.50	0.6-2.0	0.07-0.12	4.5-5.5	Low-----	0.20				
	40-62	10-20	1.20-1.40	0.6-2.0	0.04-0.08	4.5-5.5	Low-----	0.20				
48. Udorthents												
49B, 49C, 49D----	0-3	10-25	1.35-1.65	0.6-6.0	0.14-0.20	4.5-6.0	Low-----	0.32	5		3	1-3
Unison	3-44	30-70	1.30-1.60	0.6-2.0	0.12-0.18	4.5-6.0	Moderate-----	0.24				
	44-62	30-50	1.30-1.60	0.6-6.0	0.08-0.16	4.5-6.0	Moderate-----	0.28				
50B, 50C, 50D----	0-8	27-35	1.20-1.50	0.6-2.0	0.18-0.22	4.5-6.0	Moderate-----	0.37	4-3		8	1-2
Warminster	8-38	35-60	1.30-1.60	0.6-2.0	0.12-0.19	4.5-6.0	Moderate-----	0.28				
	38-45	35-60	1.30-1.60	0.6-2.0	0.10-0.17	4.5-6.0	Moderate-----	0.28				
	45-55	20-35	1.30-1.60	0.2-0.6	0.06-0.12	4.5-6.0	Low-----	0.28				
	55	---	---	0.00-0.2	---	---	-----	---				
51A-----	0-14	10-27	1.20-1.40	0.6-2.0	0.14-0.22	5.1-7.3	Low-----	0.32	5		6	1-4
Wingina	14-72	18-35	1.20-1.40	0.6-2.0	0.10-0.22	5.1-7.3	Low-----	0.28				
52B, 52C, 52D----	0-7	10-25	1.20-1.50	0.6-6.0	0.14-0.19	3.6-5.5	Low-----	0.32	5		6	1-2
Wintergreen	7-62	35-55	1.20-1.50	0.6-2.0	0.12-0.17	3.6-5.5	Moderate-----	0.24				
53B, 53C, 53D----	0-7	27-40	1.20-1.50	0.6-2.0	0.14-0.19	3.6-5.5	Low-----	0.32	5		6	.5-1
Wintergreen	7-62	35-55	1.20-1.50	0.6-2.0	0.12-0.17	3.6-5.5	Moderate-----	0.24				
54C-----	0-7	10-25	1.00-1.20	0.6-6.0	0.14-0.19	3.6-5.5	Low-----	0.24	5		8	1-2
Wintergreen	7-62	35-55	1.20-1.50	0.6-2.0	0.14-0.19	3.6-5.5	Moderate-----	0.24				
55A-----	0-20	10-27	1.20-1.40	0.6-2.0	0.14-0.22	5.1-7.3	Low-----	0.32	5		6	1-4
Yogaville	20-72	18-35	1.20-1.40	0.6-2.0	0.10-0.22	5.1-7.3	Low-----	0.28				

\* See description of the map unit for composition and behavior characteristics of the map unit.

Table 20.--Soil and Water Features

("Flooding" and "water table" and terms such as "rare," "brief," "apparent," and "perched" are explained in the text. The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Bedrock		Risk of corrosion		
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	Potential frost action	Uncoated steel	Concrete
1D, 1E----- Arcola	C	None-----	---	---	<u>Ft</u> >6.0	---	---	<u>In</u> 20-40	Soft	Moderate	Moderate	Moderate.
2A----- Batteau	C	Occasional	Very brief or brief.	Nov-Mar	1.0-2.5	Apparent	Nov-Mar	>60	---	---	Moderate	Low.
3B----- Belvoir	C	None-----	---	---	1.0-2.0	Perched	Jan-Apr	>60	---	High-----	High-----	High.
4B, 4C, 4D----- Buffstat	C	None-----	---	---	>6.0	---	---	40-60	Hard	---	Moderate	High.
5C, 5D, 5E----- Bugley	C/D	None-----	---	---	>6.0	---	---	10-20	Hard	---	Low-----	High.
6E*: Catoclin-----	C	None-----	---	---	>6.0	---	---	20-40	Hard	Low-----	High-----	Moderate.
Rock outcrop---	D	None-----	---	---	>6.0	---	---	0	Hard	---	---	---
7B----- Chatuge	D	Rare-----	---	---	1.0-2.0	Apparent	Dec-May	>60	---	---	High-----	High.
8A----- Codorus	C	Occasional	Very brief	Dec-Apr	1.0-2.0	Apparent	Nov-Apr	>60	---	High-----	High-----	Moderate.
9B, 9C, 9D----- Colleen	C	None-----	---	---	>6.0	---	---	>60	---	Moderate	High-----	High.
10A----- Colvard	B	Occasional	Very brief	Jan-Dec	4.0-6.0	Apparent	Dec-Apr	>60	---	Moderate	Low-----	Moderate.
11A----- Craigs ville	B	Frequent----	Very brief	Nov-May	>6.0	---	---	>60	---	Moderate	Moderate	Moderate.
12B, 12C----- Delanco	C	None-----	---	---	1.0-2.5	Apparent	Dec-Apr	>60	---	High-----	High-----	High.
13C, 13D, 13E--- Edneytown	B	None-----	---	---	>6.0	---	---	>60	---	Moderate	Moderate	Moderate.

See footnote at end of table.

Table 20.—Soil and Water Features—Continued

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Bedrock		Risk of corrosion		
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	Potential frost action	Uncoated steel	Concrete
14C*, 14D*, 14E*, 14F*: Edneytown	B	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate	Moderate.
Peaks	C	None	---	---	>6.0	---	---	20-40	---	Low	Low	High.
15B, 15C, 15D, 16C, 16D: Elioak	C	None	---	---	>6.0	---	---	>60	---	Moderate	High	Moderate.
17B: Elsinboro	B	Rare	---	---	>5.0	Apparent	Dec-Apr	>60	---	Moderate	Moderate	High.
18C, 18D, 18E: Fauquier	C	None	---	---	>6.0	---	---	>40	Soft	Moderate	High	High.
19A: Galtsmill	B	Occasional	Very brief	Nov-Mar	>6.0	---	---	>60	---	---	Low	Low.
20D: Glenelg	B	None	---	---	>6.0	---	---	>60	---	Moderate	Low	High.
21A: Hatboro	D	Frequent	Very brief	Nov-May	0-0.5	Apparent	Oct-May	>60	---	High	High	Moderate.
22B, 22C, 22D, 22E, 23B, 23C, 23D, 23E: Hayesville	B	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate	Moderate.
24C, 24D, 24E: Hayesville	C	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate	Moderate.
25C, 25D, 25E, 26D, 26E: Hazel	C	None	---	---	>6.0	---	---	20-40	Hard	Moderate	Low	High.
27B, 27C: Jackland	D	None	---	---	1.0-2.0	Perched	Dec-Apr	>60	---	High	High	Low.
28B, 29B, 30C, 30D, 30E: Lew	B	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate	High.

See footnote at end of table.



[illegible]

See footnote at end of table.

Table 20.--Soil and Water

Features--Continued

table		Bedrock	Flooding Risk of corrosion				High water	
Soil name and map symbol		Hydro- logic	Potential Frequency	Duration	Months	Depth	Kind	
Months	Depth	Hard- ness	frost action	Uncoated steel	Concrete			
							Ft	
	In							
44C*, 44D*,								
44E*:								
Sylco-----		C	None-----	---	---	>6.0	---	
---	20-40	Hard	Moderate	Low-----	Moderate.			
Sylvatus-----		D	None-----	---	---	>6.0	---	
---	10-20	Hard	Moderate	Moderate	Moderate.			
45E*, 45F*:								
Sylvatus-----		D	None-----	---	---	>6.0	---	
---	10-20	Hard	Moderate	Moderate	Moderate.			
Rock outcrop---		D	None-----	---	---	>6.0	---	
---	0	Hard	---	---	---			
46B, 46C, 46D---		B	None-----	---	---	4.0-		
6.0 Apparent	Dec-Mar	>60	---	Moderate	Moderate	High.		
Thurmont								
47B, 47C, 47D---		B	None-----	---	---	4.0-		
6.0 Apparent	Jan-Apr	>60	---	Moderate	Moderate	High.		
Thurmont								
48.								
Udorthents								
49B, 49C, 49D---		B	None-----	---	---	>6.0	---	
---	>60	---	Moderate	High-----	Moderate.			
Unison								
50B, 50C, 50D---		C	None-----	---	---	>6.0	---	
---	40-60	Soft	---	High-----	Moderate.			
Warminster								
51A-----		B	Occasional	Very brief	Dec-Mar	>4.0		
Apparent	Dec-Mar	>60	---	---	Low-----	Moderate.		
Wingina								

52B, 52C, 52D,									
53B, 53C, 53D,									
54C-----	B	None-----	---	---	>6.0	---			
---	>60	---	Moderate	High-----	Moderate.				
Wintergreen									
55A-----	D	Occasional	Very brief	Dec-May	0-				
1.0 Apparent	Dec-May	>60	---	---	Low-----	Moderate.			
Yogaville				to brief.					

\* See description of the map unit for composition and behavior characteristics of the map unit.